Exploring the pedagogical value and challenges of using e-portfolios as a learning tool for nursing students:

A Single longitudinal qualitative case study with Activity Theory as an analytical framework

Eman Ghallab

BSN, MSN

Thesis submitted to the University of Nottingham for the degree of
Doctor of Philosophy
September 2017

ABSTRACT

With the advances in technology and computers, e-portfolios replaced paper based portfolios in many higher education institutions and professions, including nursing (Skiba, 2005; Garrett and Jackson, 2006). They both have some overlapping benefits but the most important benefit of e-portfolios over the paper based version lies in its potential for meaningful interaction and network structure (Butler, 2006). The existing literature, therefore, suggests that e-portfolios may have some added pedagogical value. Understanding this added value through research can provide valuable data for academic, clinical and administrative staff on how to implement and use e-portfolios effectively to support students' learning. According to the literature review, there was a lack of a detailed and comprehensive study on benefits and challenges of using e-portfolios for nursing students. Hence, this study explored the pedagogical value of e-portfolios and the contextual challenges that influenced its effectiveness as a learning tool from the perspective of the key stakeholders: students, tutors, and curriculum planners. The study used qualitative instrumental case study to collect data through initial and follow up interviews, online observation and document analysis. The data were collected for a period of 21 months. The participants in this study included 14 students, 11 tutors, and 6 curriculum planners. The study employed critical realism as philosophical approach and Activity Theory as a methodological and analytical framework.

This study contributes to the literature through being the first longitudinal empirical inquiry in nursing education that adopted Activity Theory to explore the pedagogical value of

e-portfolios and the contradictions that may influence their perceived value from student and tutor perspectives. The findings of this study show that the e-portfolio allowed for a more student-centred approach to learning through providing these four affordances: *(1) Fostering communication and interaction between the students and their peers and tutors.* The findings indicated that the e-portfolio allowed for a flexible, instantaneous and ongoing online communication that helped the students to stay connected, seek feedback and support share their work, experiences, and any personal information with their tutors and raise their awareness of any issue they thought would have an impact on their learning and progress, at any time and from anywhere using their mobile devices. It also allowed them to create and participate in different online learning communities with their peers to exchange experiences and ideas, learn from and support each other. (*2) Supporting formative assessment through facilitating formative feedback and self-assessment.* The e-portfolio offered the tutors unlimited and flexible access to any work shared by their students, and this enabled them to formatively assess their students' performance and progress towards achieving the desired learning outcomes, spot more quickly those who were struggling and in need for remediation, and provide them with immediate and more personalized feedback specifically tailored to their needs. Moreover, the reflective nature of the e-portfolio and its structure encouraged continuous self-assessment through prompting the students to iteratively look back and reflect on their collection of evidence and experiences. This iterative process allowed them to develop a better understanding of their own strengths and weaknesses and engage in self-development, make connections between their seemingly

disparate learning experiences, hence, see a comprehensive picture of their learning. *(3) Scaffolding the reflective process*. The findings indicated that e-portfolio, through its inbuilt structured reflective templates, acted as a scaffold for the students who were struggling with writing reflection. These templates were perceived to have made their attempts at reflection easier and stimulated them to think deeper about their experiences. Improvement in their reflective writing was noted by some tutors and students after using the templates for a considerable amount of time. *(4) Allowing for multiple modes of presentation and self-expression.* The multimedia capabilities of the e-portfolio allowed the students to present evidence of their learning and express their thoughts and feelings in variety of modes such as videos, images, audios, and texts. Creating and combining multimedia evidence and materials enabled for presenting a more realistic and authentic view of their experiences and integrating information from different sources to show the multifaceted nature of these experiences. Interestingly, being able to present learning and achievements in multiple modes encouraged the students to view the e-portfolio as a potential tool to apply for jobs after graduation.

With regard to the challenges and contradictions, mainly secondary contradictions emerged in the context in which the e-portfolio was used. The majority of these contradictions, for example, technical issues, the tutors' perceived complexity and inefficiency of the e-portfolio system, the students' underdeveloped digital literacy, and the limited access to computers on placements, have had a short term or less harmful effect on the use and the perceived value of the e-portfolio. But, contradictions such as the mismatch that existed between the students' expectations and the tutors'

perception of the frequency and adequacy of feedback that needed to be given in the e-portfolio appears to have had a more detrimental effect on the students' motivation to use the e-portfolio.

ACKNOWEDGMENT

I would like to express my sincere gratitude to my supervisors Prof. Heather Wharrad and Dr Richard Windle for the continuous support of my Ph.D study and related research, and for their patience, motivation, and immense knowledge. Their guidance helped me in all the time of research and writing of this thesis. I could not have imagined having a better supervisors for my Ph.D study.

Additionally, I am very grateful to all those who took the time to participate in this study. Last but not least, I would like to thank my friends and my family: my parents and my brother and sisters for supporting me spiritually throughout writing this thesis and my life in general.

TABLE OF CONTENTS

ABSTRACT ..... **ii**
ACKNOWLEDGMENT ..... **vi**
LIST OF TABLES ..... **xi**
LIST OF FIGURES ..... **xii**
CHAPTER ONE: INTRODUCTION **1**
1.1 Background 1
1.2 From paper portfolios to e-portfolios 7
1.3 The need and significance of the study 9
1.4 Summary 10
CHAPTER TWO: BACKGROUND **12**
2.1 Introduction 12
2.2 Definitions of portfolios and e-portfolios 12
2.3 International comparison of e-portfolios drivers and practices 17
2.3.1 Europe 17
2.3.2 The United Kingdom 18
2.3.3 Australia 19
2.3.4 The United States 21
2.4 Theoretical basis of portfolios 23
2.4.1 Adult learning theory: Andragogy 23
2.4.2 Constructivism 24
2.4.3 Experiential learning: Kolb's learning cycle (1984) 26
2.4.4 Reflection and reflective practice 28
2.5 Professionalism and reflective practice 36
2.6 Hidden curriculum in healthcare professional education 42
2.7 Changes in professional practice across professions 45
2.8 Uses/purposes of portfolios 49
2.8.1 Portfolios as learning tools 49
2.8.2 Portfolios as assessment tools 51
2.8.3 Portfolios as employment or marketing tools 53
2.9 The use of portfolio in postgraduate healthcare education 55
2.9.1 Promoting reflection 55
2.9.2 Support learning and continuing development in practice 57
2.9.3 A mechanism for summative assessment 59
CHAPTER THREE: SYSTEMATIC REVIEW **64**
3.1 Methodology of the literature review 64
3.2 Key findings of critical review 67
3.1.1 Paper-based portfolios 67
3.1.1.1 The pedagogical value of paper-based portfolios 68
3.1.1.2 Limitations of paper-based portfolio 73

3.1.2 E-portfolios.....74
3.1.2.1 The pedagogical value of e-portfolios..... 74
*3.1.2.2 Issues and concerns related to the use of e-*portfolio..... 83
3.3 Discussion and justification for further research..... 87
3.4 Research aims and objectives..... 91
3.5 Summary..... 92
CHAPTER FOUR: THEORETICAL FRAMEWORK 93
4.1 Introduction 93
4.2 The sociocultural approach to learning 93
4.3 Vygotsky's sociocultural learning theory 96
4.3.1 *Mediation* 97
4.3.2 *Internalization* 99
4.3.3 Zone of proximal development ZPD..... 100
4.3.4 Shortcomings of Vygotsky's sociocultural theory 101
4.4 Activity Theory 101
4.4.1 Activity as the basic unit of analysis 102
4.4.2 The first generation of Activity Theory: from Vygotsky to Leontiev. 103
4.4.3 The second generation of activity theory: from Leontiev to Engestrom 105
4.4.4 The third generation of activity theory: Engestrom..... 106
4.4.5 Components of activity system 107
4.4.6 Five principles of the third generation of activity theory..... 110
4.5 Summary 112
CHAPTER FIVE: METHODOLOGY AND METHODS.....113
5.1 Introduction 113
5.2 Research aims and objectives 113
5.3 Methodology 114
5.3.1 The qualitative research approach: selecting the approach..... 114
5.3.2 The underpinning philosophy: understanding the approach 116
5.3.2.1 The tenets of critical realism 117
5.3.2.2 Critical realism and Activity theory 119
5.3.2.3 The justification for using critical realism 120
5.3.3 The research design 121
5.3.3.1 Selecting the appropriate design 121
5.3.3.2 Longitudinal instrumental case study design 125
5.3.3.3 Defining the case, the unit of analysis and the boundaries... 126
5.3.4 Data collection methods..... 129

5.3.4.1 Qualitative interviews 130
5.3.4.2 Online observation 134
5.3.4.3 Document analysis 138
5.3.5 Study procedures 139
5.3.5.1 Ethical approval 139
5.3.5.2 Selecting the study/case site 139
5.3.5.3 Sampling strategy: selecting the case and participants 140
5.3.5.4 The recruitment and selection procedures 146
5.3.5.5 Data collection procedures 148
5.3.6 Data analysis 152
5.3.6.1 Data management and transformation (transcription) 152
5.3.6.2 Activity theory and critical realism as an analytical tool 153
5.3.6.3 Sequential induction: a retroductive analytical approach 154
5.3.6.4 Constant comparative technique 156
5.3.6.5 Data analysis procedures 156
5.3.7 Trustworthiness of the qualitative research 167
5.3.7.1 Credibility 167
5.3.7.2 Dependability 171
5.3.7.3 Transferability 174
5.3.8 Ethical considerations 176
5.3.9 Summary 179
CHAPTER SIX: DESCRIPTION OF THE SOCIOCULTURAL CONTEXT. 180
6.1 Introduction 180
6.2 The components of activity system 180
6.3 Summary 200
CHAPTER SEVEN: ACTIVITY 1: RECORDING AND STORING WORK ITEMS AND EVIDENCE 201
7.1 Introduction 201
7.2 The components of the "Recording and storing" activity system 201
7.3 The benefits of the e-portfolio as a mediator for the "Recording and storing" activity 208
7.4 Challenges and contradictions and in the "Recording and storing" activity 220
7.5 Summary 230
CHAPTER EIGHT: ACTIVITY 2: EVIDENCING THE ACHIEVEMENT OF LEARNING OUTCOEMS..... .231
8.1 Introduction 231

8.2 The components of the "Evidencing" activity system 232
8.3 The benefits of the e-portfolio as a mediator for the "evidencing" activity 238
8.4 Challenges and contradictions in the "Evidencing" activity 255
8.5 Summary 264
CHAPTER NINE: REFLECTING ON LEARNING EXPPERIENCE 265
9.1 Introduction 265
9.2 The components of the "Reflection" activity system 265
9.3 The benefits of the e-portfolio as a mediator for the "Reflection" activity 272
9.4 Challenges and contradictions in the 'Reflection' activity 293
9.5 Summary 304
CHAPTER TEN: SHARING WORK WITH OTHERS 305
10.1 Introduction 305
10.2 The components of the "Sharing" activity system..... 305
10.3 The benefits of the e-portfolio as a mediator for the "Sharing" activity 311
10.4 Challenges and Contradictions in the "Sharing" activity 326
10.5 Summary 348
CHAPTER ELEVEN: DISCUSSION 349
11.1 Introduction 349
11.2 Discussion of the major findings 349
11.2.1 Pedagogical value of the e-portfolio..... 350
11.2.2 Challenges and contradictions 387
CHAPTER TWELEVE: CONCLUSION AND RECOMMENDATIONS .391
REFERENCES.....407
APPENDICES.....466
Appendix A: Initial and follow up interview guides 466
Appendix B1: information sheets 482
Appendix B2: The consent form..... 498
Appendix C: Demographic questionnaires 500
Appendix D: Initial codes clustering 503
Appendix E: Coding using AT triangle..... 512
Appendix F: Example of online observation notes 519
Appendix G: The findings from student' demographic questionnaire information 531

LIST OF TABLES

Table 2.1: Examples of reflection models 37
Table 3.1: Inclusion and exclusion criteria of studies..... 66
Table 5.1: The purpose of the initial and follow up interviews for each category of participants..... 135
Table 5.2: Factors to be considered when determining sample size..... 145
Table 5.3: The number of interviews conducted in the study 149
Table 5.4: the relationship between the selected sub-activity triangles and the research aims..... 166
Table 5.5: An example of double coding strategy 172
Table 7.1: Challenges and contradictions in the recording and storing activity 223
Table 8.1: Challenges and contradictions in the "Evidencing" activity 257
Table 9.1: Challenges and contradictions in the Reflection activity 296
Table 10.1 Challenges and Contradictions in the "Sharing" activity 328

LIST OF FIGURES

Figure 2.1: Kolb's experiential learning cycle..... 27
Figure 4.1: The theoretical framework of the current study 96
Figure 4.2: The first generation of activity theory 104
Figure 4.3: Leontiev's model of activity 105
Figure 4.4: The second generation of activity theory 106
Figure 4.5: The third generation of activity theory 107
Figure 5.1 Domains of reality 118
Figure 5.2: the case composition 128
Figure 5.3 Timeline of data collection 148
Figure 5.4: AODM's Eight-Step-Model 163
Figure 7.1: Recording and storing information in the learning activity system 203
Figure 8.1: The "Evidencing the achievement of learning outcomes and competencies" Activity System 233
Figure 9.1: The "Reflection on experience" Activity System..... 266
Figure 10.1: The "Sharing work with others "Activity System 307

CHAPTER ONE: INTRODUCTION

1.1 Background

Technology is increasingly embedded in all aspects of living and has progressively become an integral part of everyday activities such as shopping, banking, and making calls (Harper et al., 2008, Sharpe et al., 2010, Lee et al., 2010, Kwon, 2016). It has an ever-increasing bearing on how we think, acquire knowledge, communicate and interact with others. It has provided us with new ways to access, search for, gather and share information and stay connected with the world (Dahlstrom et al., 2015). According to some recent reports on the economic impact of digital skills in the UK from the Centre for Economics and Business Research (CEBR) (Oliver et al., 2015), the Department for Business Innovation and Skills (ECORYS (Firm), 2016), and the JISC's Developing Digital Literacies Programme (JISC, 2012), this current digital transformation has changed and reshaped the nature of work as performing tasks increasingly requires interaction with technology. Therefore, digital literacy has become a necessity and is considered a vital skill for both life and workplace. Digital skills are not only crucial for individuals but also for the society as a whole and its economic prosperity.

Speaking of economy, the recent report by the House of Lords: Select Committee on Digital skills (2015) stated that the digital revolution and the recent growth of mobile technologies are having a substantial impact on the UK economy. The digital economy has become an integral part of, and a significant driver for the nation's economic growth. The digital sector is one of the biggest economic contributors to the overall economy of the country. The sector had an

estimated worth of £102 billion in 2011, then it grew to become more than twice as large as the officials have estimated in 2013. However, there is a concern that the UK might not be able to keep up with this exponential growth of technology. This report was a call to action for the UK government to adopt new approaches to keep pace with the best technology in the world in order to retain its position as a digital leader and realize the country's economic potential (House of Lords: Select Committee on Digital skills, 2015).

In response to this economic pressure and pervasiveness of technology, the Higher Education (HE) sector has gradually changed and evolved to keep up with the evolving technology and digital change (JISC, 2011, Davies et al., 2017). According to the JISC's Developing Digital Literacies Programme (JISC, 2012) which funded twelve projects in UK higher education institutions in collaboration with ten professional association to improve digital literacies, many UK universities and colleges started to incorporate modern technologies in the courses they offer to support the teaching and learning process and develop digitally literate graduates to meet the demand of the employers both nationally and internationally. These technologies has challenged the traditional methods of delivering education and allowed for new models of learning to emerge as the traditional teaching-centred model of learning no longer meets the diverse needs and backgrounds of students in the twenty-first century (Hannafin and Land, 1997, Brown, 2003, Pagani, 2005, Kalathingal and Buchanan, 2017).

Over the past few decades, a major paradigm shift has occurred in the field of education, where a more learner-centred approach to learning has been advocated to replace

the conventional teacher-centred approach. This learner-centred approach places students at the centre of the educational process while places teachers in a more facilitative role (Pine and Boy, 1977, Zophy, 1982, Weimer, 2002). The student's role shifts from the position of receiver to the position of an active and curious learner, who is able to take control of and responsibility for their learning. In the same way, the teacher's role shifts from the role of a knowledge mediator to the role of a facilitator and adviser, who encourages the students to construct their own knowledge and to critically reflect on their learning, by creating a learning environment that fosters and stimulates interaction and dialogue among students (Weimer, 2002, Hirumi, 2002, Keengwe et al., 2009, Dema and Moeller, 2012). Similarly, in the field of nursing education, this paradigm shift has been triggered by the need to prepare independent, self-regulated, lifelong and reflective learners who are capable of meeting and adapting to the rapid and constantly changing healthcare needs of the communities they serve (Paniagua-Ramirez et al., 2004, de Castro Friedrich et al., 2010, Stanley and Dougherty, 2010).

Technology, with learning as the prime consideration, is seen to offer rich opportunities to move away from the "highly centralized industrial model of learning" towards a more personalized form of learning that focuses on and promotes individual empowerment and learner agency. For instance, Web 2.0 technologies hold a considerable potential to promote and support the learner-centred approach through facilitating user-centred design, customization of content and design, interaction, collaboration and information sharing (Rogers et al., 2007, Lee, 2010). Among the tools that share

more in common with web 2.0 technologies and support learner-centred approach to learning are e-portfolios (Sorensen and Takle, 2005, Lee and McLoughlin, 2007, Jenkins et al., 2009). They have been advocated as one of the educational technologies that can prepare nursing students for the next era (Nairn et al., 2006, Buckley et al., 2009, Wassef et al., 2012, Birks et al., 2016).

Historically, in the UK during the 1980s and 1990s, portfolios began to be used in undergraduate nursing education as student-centred learning tools, by means of which, nursing students were able to reflect on their learning, document their progress and achievement and link theory to practice (Coffey, 2005, Nairn et al., 2006, McMullan, 2008, McMullan, 2006, Green et al., 2014). They were also used as assessment tools, in order to assess the clinical competence of preregistration nursing students in practice (Green et al., 2014, McMullan, 2008). They have increasingly become a common alternative to the traditional assessment methods because they can provide a holistic and comprehensive means of assessing students' competence (Challis, 1999, Greenhalgh and Hurwitz, 1999, Pitts et al., 2002, Driessen et al., 2006, Vernazza et al., 2011). There has been an interest in using portfolios for assessment in health professions because of their potential to assess performance and clinical competencies, such as communication, leadership, creativity, and professionalism, which are difficult to assess using conventional instruments of assessment (Davis and Ponnamperuma, 2005, Van Tartwijk and Driessen, 2009, Haldane, 2014). Therefore, portfolios have been proposed to provide an assessment framework to assess students at the level of "does" in Miller's (1990) pyramid of competence, the

highest level of the pyramid (Endacott et al., 2004, Davis and Ponnamperuma, 2005, Garrett et al., 2013, Harden and Laidlaw, 2016). Biggs (1996) asserts that preparation of an assessment portfolio is an active process that is considered to be a student-centred approach to assessment based on the constructivist learning theory. This process requires the students to collect, select, synthesize, and organize their work in order to provide evidence that the desired learning have taken place and the learning outcomes have been achieved. It is assumed that learning may be enhanced during the preparation of assessment portfolio because students are encouraged to reflect on their work and experiences and identify their learning needs and plan for improvement throughout the process (Harris et al., 2001, Endacott et al., 2004, Van Tartwijk and Driessen, 2009).

The interest in using educational portfolios started to increase in higher educational (HE) institutions, as a response to the recommendations of the National Committee of Inquiry into Higher Education in the UK. They recommended the introduction of a Progress File for all students in higher education institutions. This progress file offers students "a means by which the students can monitor, build and reflect upon their own personal development" (Dearing, 1997, 20th recommendation). At the same time, the development and maintenance of a portfolio by undergraduate nursing students has become a compulsory component of their education, as mandated by the English National Board for Nursing, Midwifery, and Health Visiting, then by Nursing and Midwifery Council (NMC) later on (McMullan, 2006). In keeping with these requirements, paper-based portfolios were introduced to the undergraduate nursing students in the school where

the current study was conducted more than 10 years ago. The purpose of introducing it was to allow the students more autonomy in planning and demonstrating their personal and professional development. The students were expected to provide evidence of their achievement of the NMC learning outcomes and competencies and keep them in their portfolios. Examples of this evidence were copies of assignments, lists of the competencies satisfied and signed during their placements, feedback from their tutors and mentors and reflections on critical incidents that happened in the classroom or the clinical placement. This evidence was recorded in their Assessment of Practice Record, in the portfolio. This Assessment of Practice Record was assessed by their mentors at the end of each clinical placement and verified by their academic tutors at the end of each year.

In keeping with the contemporary educational development and in response to the university's wide-scale e-portfolio implementation strategy to move from paper portfolios to electronic portfolios, e-portfolios were introduced to the nursing students in the school in September 2012. According to the report of the case study of the university's e-portfolio implementation strategy Joyes et al. (2013), the key institutional drivers for moving to electronic portfolio were:

- Supporting the institutional focus on improving feedback to students and the role of the tutor.
- The potential for improvements in communication
- Supporting the development of employability skills for undergraduates, thus, enhancing employability.
- The potential efficiency gains particularly for administrators.

The school of Health Sciences has adopted PebblePad as its e-portfolio system after a number of small pilots were conducted in the school to test its applicability and feasibility before it was officially introduced

It worth noting that the e-portfolio was not introduced to replace the paper based portfolio in the school. The paper based portfolio, known as a "practice portfolio", is still used in the clinical practice part of the program. The e-portfolio, on the other hand, is used mainly as a personal record and for modular work. However, the students are free to record and store any materials they gather from or create whilst on placement in the e-portfolio. They are also free to use them as evidence and link them to the appropriate theoretical learning outcomes in the e-portfolio so that theory and practice are linked.

1.2 From paper portfolios to e-portfolios

The term portfolio, in its simplest form, can be defined as: a purposeful collection of evidence or work by students, collated in order to show a picture of their learning, experiences, achievement and growth over time. Therefore, it is believed that the process of developing a portfolio allows students to be involved in their own learning and become active agents, who reflect on their learning and performance diagnose their own learning needs and, as a result, are able to direct their learning accordingly (Buckley et al., 2009). The early development of portfolios was in a paper based format. However, with the widespread use of technology and computers in higher education, the paper portfolio started to evolve into an electronic portfolio, also known as an 'e-portfolio' (McKenzie et al., 2002). In line with the changes in

higher education, the interest in the use of e-portfolio in nursing education has also increased (Skiba, 2005). The definition of an e-portfolio varies widely in the existing literature. Some literature focuses on the technological aspect of the e-portfolio and describes it as a digital collection of artifacts with a high standard presentation of learning. On the other hand, other literature focuses on its educational aspects and describes it as an effective learning tool that possesses a number of functions and features that support different aspects of the learning process (Pincombe et al., 2010). However, Butler (2006) emphasises that the main focus of e-portfolios must be on learning not on the technology used to facilitate that learning.

Both e-portfolios and paper based portfolios have some overlapping benefits. However, one of the most important benefits of e-portfolios over paper portfolios is the potential for more effective and meaningful communication between students and other stakeholders (Butler, 2006). An e-portfolio, therefore, can be a valuable tool for nursing students who are on remote clinical placements and may feel isolated from academic support. Garrett and Jackson (2006) suggest that the interactive nature of e-portfolios can help tutors to communicate with their students while they are on placement and provide them with the necessary support and feedback, letting them know that they are always there and present for them, even if remotely. Another important benefit of e-portfolios is that they are more accessible than paper portfolios. They provide students with a personal learning space that can be easily accessed on the web. Such accessibility can help students to reflect instantly on their experience and edit their work accordingly, sharing their work

and knowledge with others and giving and receiving immediate feedback (Bogossian et al., 2009, Bogossian and Kellett, 2010, Pincombe et al., 2010). It has been argued that the accessible and interactive nature of e-portfolios may "open wide the possibilities for reflections of all types: in action, before action, after action, in solitude, in consultation with peers, in consultation with instructors, coaches, and advisers, written, spoken, videotaped, or graphically represented' (Riedinger, 2006P.94): P.94). Based on these potential benefits, it has been proposed that e-portfolios may have a great potential to transform and enhance the learning of nursing students (Pincombe et al., 2010). There is no enough empirical evidence to support the above mentioned assumptions. Hence, these assumptions need to be investigated and supported by empirical evidence rather than relying only on theory and personal opinion. Hence, the current study was carried out.

1.3 The need and significance of the current study

As discussed in the previous section, the existing literature suggests that the emergence of the e-portfolio was not only to overcome the bulkiness and high volume paper of work of the paper based portfolios produced, but it may also have some pedagogical value in terms of supporting students' learning. Understanding these pedagogical value through research can provide valuable data for academics, clinical and administrative staff on the effectiveness of using e-portfolios to support nursing students' learning.

The literature review reveals that the majority of previous studies conducted on the use of e-portfolios in undergraduate nursing education focused only on students' and/or mentors'

perceptions of the usefulness of the e-portfolio. Most of these studies were surveys, therefore, did not provide a detailed and comprehensive understanding of the pedagogical value of the e-portfolio for nursing students. Moreover, relatively little is known about how the context in which an e-portfolio is embedded may influence its role as a learning tool. Because of this, the current study adopted a qualitative case study approach, using multiple data collection methods to develop a comprehensive and in-depth understanding of the pedagogical value of the e-portfolio for nursing students, as well as to raise awareness of the challenges that might arise from the context and influence its value. Moreover, the study adopted Activity Theory as a methodological and analytical framework, to capture the complexity of the context in which the e-portfolio is situated and identify the challenges and contradictions that might emerge from this context and hinder the role of e-portfolio as a learning tool. Chapter 4 provides an overview of Activity Theory and why it was used in the current study. In Chapter 5, the application of Activity Theory framework to the data collection and analysis in the current study will be explained.

1.4 Summary

This chapter provided an overview of the concept of educational portfolios, the transition from paper based portfolios to e-portfolios, and presented some of the potential benefits of the e-portfolio in nursing education. Generally, portfolios promote students centred learning and encourage students to take control and responsibility of their own learning. Over the past decade, e-portfolios have, increasingly, been replacing their paper counterparts in undergraduate nursing education. However, it is important to

note that e-portfolios are more than just an electronic replicate of the paper portfolios, in which students are merely able to store their work in an electronic format. Rather, the connectivity and accessibility nature of e-portfolios may bring about some greater pedagogical value for nursing students and enhance their learning experience. Understanding this pedagogical value could have important implications for students and academic and clinical staff. Based on the reviewed literature, it appears that more comprehensive research is needed, to understand the pedagogical value of e-portfolio and the limitations of its role as a learning tool. Due to this, the current study was proposed and carried out in the school of Health Sciences in one of the universities in the UK, where the e-portfolio had been introduced to the first year nursing students.

CHAPTER TWO: BACKGROUND

2.1 Introduction

This chapter provides background information on portfolios: their definitions, theoretical basis, and uses. The chapter will also provide an overview of current thinking around the contribution of e-portfolios in contemporary areas including professionalism, the hidden curriculum, post-graduate education, and changes in healthcare professional practice.

2.2 Definitions of portfolios and e-portfolios

Electronic portfolios are a relatively new innovation in higher education, however their paper counterparts have been used for much longer. The word portfolio originates from the Italian words "Portare Fogli" meaning to carry paper or sheets (Green et al., 2014). Portfolios have their origin in artistic disciplines where artists, designers and architects used to collate examples of their work in a portfolio that showcased their best work and demonstrated their skill development (Hull and Redfern, 2002;Pearce, 2003). This idea was then adopted by many educational institutions and portfolios have been widely used across various professional disciplines at different levels of education (Ajandi et al., 2013 ;Green et al., 2014).

The definition of educational portfolios varies slightly depending on its purpose and the context in which it is used. However, there seems to be a general agreement that a portfolio is a purposeful collection of student's work that demonstrates achievement and shows progress (Stecher, 1998;Davis et al., 2001;Grant et al., 2007;O'Sullivan, 2014). One of the very earliest definitions described a portfolio as "a file or folder of information which has been accumulated

about a student's past experiences and accomplishments, it can be the vehicle for organizing and distilling raw prior experiences in a manageable form for assessment and a process by which prior experiences can be translated into educational outcomes or competencies, documented and assessed for academic credit or recognition" (Knapp, 1975, p.2). This definition focused more on the portfolio as a vehicle for documenting, organizing and assessing prior experiential learning. Other definitions, on the other hand, described a portfolio as a tool that provides evidence of not only past experiences but also current experiences, continuing growth and future potential. For example, Brown (1995) defined a portfolio as "… a private collection of evidence which demonstrates the continuing acquisition of skills, knowledge, attitudes, understanding and achievement. It is both retrospective and prospective as well as reflecting the current stage of development and activity of the individual." (p.3). Similarly, (Price, 1994) and Campbell (2004) described a portfolio as an organized, goal–driven, dynamic record that provides evidence of personal and professional growth and development.

Other definitions have emphasized the necessary elements or components of developing a portfolio. For instance, one of the most commonly accepted definitions described a portfolio as "a purposeful collection of student work that exhibits that student's efforts, progress, and achievements in one or more areas. The collection must include student participation in selecting contents, the criteria for selection, the criteria for judging merit, and evidence of student self-reflection" (Paulson et al., 1991, p.60). This definition regarded the processes of collection, selection and reflection as the main

elements of developing a portfolio. In a similar vein, Bullock and Hawk (2005) argue that a portfolio should include four necessary components: specific purpose, target audience, evidence of achievement, and reflection. Amongst these components, reflection is considered the heart and soul of a portfolio and without it the portfolio is just a scrapbook (Kovalchick and Dawson, 2004;Bullock and Hawk, 2005;Barrett, 2010). Reflection enables students to think about their learning and identify their weaknesses, strengths and learning needs. It also gives a meaning to the collection of evidence and justifies the selection of particular pieces of work as evidence of achieving the learning outcomes (Gallagher, 2001;Fernsten and Fernsten, 2005). Simply put, reflection is what makes a portfolio a portfolio (Karlowicz, 2000). This idea is in line with McMullan's (2003) definition which focuses on the cognitive and analytical processes involved in the development of a portfolio. She suggested that a portfolio is "a collection of evidence, usually in written form, of both the products and processes of learning. It attests to achievement and personal and professional development, by providing critical analysis of its contents" (McMullan et al., 2003, p.288).

Over the last few decades when the technology moved ahead and the interest in using electronic media increased, considerable attention has been paid to the use of electronic formats of portfolios. E-portfolios are increasingly replacing paper portfolios in many higher education institutions including nursing (Skiba, 2005;Garrett and Jackson, 2006;Fawns and McKenzie, 2009). They have been adopted as tools for demonstrating personal and professional development and for assessing students' learning (McMullan

et al., 2003;Gordon, 2003;Tochel et al., 2009). The transition from paper portfolios to electronic portfolios was described as moving from static records to systems that encourage students to actively and interactively engage in their learning (Timmins and Dunne, 2009),

E-portfolios have a slightly different definition than paper portfolios however the overall concept is the same. An e-portfolio in its simplistic form can be defined as an electronic platform that can be used to collect, store, organize and retrieve information such as text, video, audio and graphic materials or documents (Butler, 2006). This definition is potentially deceptive, because e-portfolios have evolved from being mere storage systems to systems of learning, collaboration, communication and integration of information (Andre, 2010). This also emphasizes the notion that the emergence of e-portfolios was not primarily to overcome the physical limitations of its paper counterparts — the bulkiness and high volume of paperwork, rather it was mainly because their additional functionalities and applications that can be of some pedagogical value (Stefani et al., 2007;Zubizarreta, 2008).

According to the Joint Information System Committee (JISC), there is no consensus in the literature on the definition of an e-portfolio. Therefore, JISC recommended that a helpful starting point to define e-portfolios is to distinguish between the e-portfolio as a product and as processes, albeit these are intrinsically linked and interdependent (JISC, 2008a). Thus, the definition of an e-portfolio should encompass both the product and process. Based on that, they defined an e-portfolio as:

> "The product, created by the learner, a collection of digital artifacts (both formal and informal) articulating experiences, achievements and learning. Behind any product, or presentation, lie rich and complex processes of planning, synthesizing, sharing, discussing, reflecting, giving, receiving and responding to feedback. These processes –referred to here as 'e-portfolio-based learning' – are the focus of increasing attention, since the process of learning can be as important as the end product." (JISC, 2008a, p.6).

The definition by JISC did not clearly mention the multimedia component in e-portfolios where students can use a variety of media to record and present their learning. However, this multimedia media capability was mentioned in an earlier definition by Abrami and Barrett (2005) who viewed an e-portfolio as "a digital container capable of storing visual and auditory content including text, images, video and sound … designed to support a variety of pedagogical processes and assessment purposes" (p.2). A more comprehensive definition was provided by Challis (2005), who described e-portfolios in terms of five elements: "(1) selective and structured collections of information; (2) gathered for specific purposes and showing/evidence; (3) stored digitally and managed by appropriate software; (4) developed by using appropriate multimedia and customarily within a web environment; and (5) retrieved from a website, or delivered by CD-ROM or DVD" (p.3). Likewise, Walz (2006) identified e-portfolios as systems that having the following basic distinct functions: storage, information management, connections, communication, and development. In conclusion, all the aforementioned definitions show that despite the similarities between paper and electronic

portfolios, a significant difference still exists in the way an e-portfolio is developed, updated, stored, accessed, shared and enriched with multimedia and interactive elements.

2.3 International comparison of e-portfolios drivers and practices

There has been a growing recognition of the use of e-portfolios by many organizations and institutions around the world (McFarlane, 2003). Governmental and academic policies and practices related to e-portfolios development differ from one setting to another and can have a significant impact on their use to support learning, assessment and employability (Hallam et al., 2010). This sections presents examples of the policies, practices, drivers, initiatives and projects related to the use of e-portfolios in different countries.

2.3.1 Europe

A number of international e-portfolio initiatives have been steady growing over the past few years in Europe. The development of e-learning technologies and strategies has led the European Institute for E-Learning (EIfEL) to launch an international campaign called "eportfolio for all" in 2003. The main purpose of this campaign was that, in 2010, all European citizens would have access to an e-portfolio and enjoy its full benefits (European Institute for E-Learning (EIfEL), 2008). Europe considered lifelong learning as significant strategy to support the achievement of its social, economic and employment goals (Leney et al., 2004;Baris and Tosun, 2011). In this regard, portfolios were promoted to be the medium of choice to support lifelong learning in the 21st century (Buzzetto-More, 2010;European Institute for E-Learning (EIfEL), 2008).

The campaign of "eportfolio for all" has provided a focal point for other e-portfolio projects and initiatives, for example, such as European Portfolio Initiatives Coordinating Committee (EPICC), Europortfolio, Network for Lifelong Competence Development (TENCompetence) and Europass (Hallam et al., 2010). The goals of these projects and initiatives are to encourage the usage of e-portfolios to transform current practice, improve the quality of lifelong learning and continuing professional development – beyond initial and higher education (McAllister et al., 2008;Baris and Tosun, 2011). They also aim at widening the interest of using e-portfolios among, employers, career services, and professional bodies across the European sector and the wider community (European Institute for E-Learning (EIfEL), 2008).

2.3.2 The United Kingdom

The UK is actively engaged in promoting and supporting the use of portfolios (Hallam et al., 2010;Baris and Tosun, 2011). The portfolio activity initially was driven by government policy with the national committee of Inquiry into Higher Education, chaired by Sir Ron Dearing (1997). The committee recommended that all students on all taught courses should have the opportunity to use a progress file as a way to reflect on their learning and record their Personal Development Planning (PDP) (Dearing, 1997). Many higher education institutions in the UK have chosen to use e-portfolios to support the implementation of progress files and personal development Planning (PDP) (Frith, 2010).

The UK government policies seem to support the implementation of e-portfolios, for example, the e-strategy of the Department for Education and Skills aimed to "Provide a personalised online learning space for every learner that can

encompass a personal portfolio" in every school by 2007-08 (Department for Education and Skills, 2005, p.44). Moreover, the Joint Information Systems Committee (JISC) stated that: "lifelong and personalised learning policy drivers propose that all learners should be able to develop, record, re-purpose and transfer a wide range of information about themselves electronically, as they progress through different levels and episodes of learning, training and employment" (JISC, 2006,P.1).

However, the interest in using e-portfolios in the UK has not just been driven by top down policies and projects (Hallam et al., 2010). The growing need within higher education institutions for widening participation, promoting lifelong learning, improving employability, supporting personalized learning and promoting reflective practice especially in healthcare disciplines have also contributed to widening the interest in using e-portfolio (JISC, 2008b;Joyes et al., 2010).

It has been proposed that e-portfolios serve a range of purposes across the different life stages, for example, support application for jobs and education , facilitate the transition between institutions and different stages of education, support formative and summative assessment, support learning through reflection and discussion, and provide evidence for personal and continuing professional learning (JISC, 2007). Therefore, their value has been recognized by stakeholders in educational institutions, employers and policy makers (Moores and Parks, 2010).

2.3.3 Australia

The interest in using e-portfolios in Australian educational institutions arose from the need to implement the policy of the Australian Federal Government which seeks to "enhance

the quality of education, encourage widened access to education opportunities, and stimulate integration between vocational education and training and higher education in order to support innovation and productivity to ensure ongoing national economic development and growth" (Hallam et al., 2010, p.295). It was argued that e-portfolios could play an important role in linking education and employment sectors in a useful way by promote lifelong and life-wide learning (Barrett, 2008;Weber and Evans, 2011)

In 2008, the Australian Learning and Teaching Council (ATLC) has demonstrated its support to investigate the area of e-portfolio through funding the "Australian eportfolio Project" which focuses on researching e-portfolios in education, employment and the community. This project then led to the development of the Australian eportfolio Community of Practice (McAllister et al., 2008;Hallam et al., 2010;Weber and Evans, 2011). The project was led by the Queensland University of Technology, in collaboration with University of Melbourne, University of Wollongong and University of New England. The goals of the project were to provide an overview of the national and international context related to the e-portfolio development and practices as well as offer guidance and recommendations about future opportunities for e-portfolio development (Mccowan et al., 2005;Lambert and Corrin, 2007;Hallam et al., 2008;Rowley, 2016). The ultimate aim of the project was to increase e-portfolio engagement in Australian higher education and to positon Australia in the international eportfolio scene (McAllister et al., 2008).

In 2005, the Australian Flexible Learning Framework began to provide resources and funding for a number of e-portfolio projects, activities and initiatives in the Vocational Education

and Training (VET) sector in response to the growing use of e-portfolios in education, training and employment (Perry and Framework, 2009;Harris et al., 2012). There have been also other e-portfolio initiatives related to career and employment in higher education. These initiatives were a response to the call from Australian employers for job-ready graduates (McAllister et al., 2008;Hallam et al., 2010). According to a survey prepared for the Business, Industry and Higher Education Collaboration Council, employers "generally favoured the ePortfolio approach as a means to obtain a more informed picture of a candidate than is usually provided in a traditional curriculum vitae" (Precision Consultancy, 2007,p.42).

All these projects and initiatives were in line with the move towards student-centred learning, the increased focus on the reflective practice and lifelong learning with strong digital literacy and employability skills (Hunter, 2012;Galatis et al., 2009). By 2011, most universities have implemented an e-portfolio system to some degree whether it was open source, commercial or in-house developed system (Hunter, 2012;Hains-Wesson et al., 2014;Rowley, 2016).

2.3.4 The United States

In the US, there are hundreds of colleges and universities adopting e-portfolios for a variety of purposes, for example, enhancing learning and assessment (Goldsmith, 2007) and support students' career planning and transition to professional roles (Lumsden, 2007). In the early years of the e-portfolio movement in the US, e-portfolios were adopted by some small liberal arts colleges such as Alverno College, kalamazoo College, and Messiah College. Today, e-portfolios are adopted by a wide range of higher education institutions

such as community colleges, liberal arts school, and public and private universities (Clark and Eynon, 2009). In these institutions, e-portfolios have been adapted to the needs of students, programs, disciplines and institutional cultures (Cambridge et al., 2001).

The rapid growth in using e-portfolios in the US over the past ten years was driven by three major forces: the pedagogical shift to student-centred learning in higher education, the increased use of web based technologies and digital communication, and the fluidity in education and employability where students and professionals need "an education passport," to represent their learning and carry it with them as they move from one institution to another (Clark and Eynon, 2009).

In some areas in the US, e-portfolio has been extensively used. For example, in the Minnesota state, there are over 100,000 e-portfolio users in the eFolio Minnestota system, which is available to all state residents to showcase their personal and professional development (Clark and Eynon, 2009;Cambridge, 2008). In New York, LaGuardia Community College has created one of the country's largest e-portfolio initiatives. Since 2002, more than 17,000 LaGuardia students have created e-portfolios (Bass and Eynon, 2009).

The Inter/National Coalition for Electronic Portfolio Research is a non-profit organization based in the US but with international partners (McAllister et al., 2008;Cambridge et al., 2009). This organization is dedicated to conducting research on the impact of e-portfolios on student learning and educational outcomes. Each year 10 educational institutions are selected through an application process, on a three year rotation. Each institution works on an individual project with

the aim of collecting data to answer these questions: "What learning is taking place as a function of electronic portfolios?" and "How do we know?" (Inter/National Coalition For Electronic Portfolio Research, 2003). Examples of member institutions in the Inter/National Coalition are Bowling Green University, the University of Michigan, and Indiana University–Purdue University Indianapolis (IUPUI). These universities are using e-portfolios as part of their assessment approaches.

2.4 Theoretical basis of portfolios

The theoretical underpinnings for the use and development of portfolios lie in a number of theories, for example, the theory of Andragogy espoused by Knowles (1973), constructivism, Kolb's experiential learning theory (1984), and theories of reflective practice such as Schön (1983), (Moon, 1999b) and other models. The assumptions and premises of each of these theories are presented in details in this section

2.4.1 Adult learning theory: Andragogy

The first theoretical approach to portfolios assumes that students are adult learners who are self-directed individuals (Dearman et al., 2014). In one of the best known theories of adult learning, Andragogy, Knowles (1984) argued that adults can learn best when they: are actively engaged in their learning and motivated to learn by internal incentives such as: desire to achieve; curiosity, boosting self-esteem, achieving self-actualization and obtaining recognition and appreciation for their contribution and effort. Knowles (1984) also argued that the learn best when they are given the opportunity to autonomously make decisions regarding how they learn, take responsibility for their own learning, perceive learning as relevant to their needs and interests, and use the

existing knowledge and experience they gained throughout their life and apply it to their current learning experiences

However, it is difficult to conclude that all adult learners have strong adult learning tendencies or possess all the above mentioned qualities (Cayne, 1995). In this regard, portfolios are being proposed as tools that can help in nurturing and developing these qualities (Brown, 2002;Dearman et al., 2014). For instance, the purposes and the developmental and dynamic nature of portfolios have been seen to encourage students to actively engage in, and take charge of their learning (McMullan et al., 2003;Schmitz et al., 2010). The process of developing portfolios requires students to analyse and reflect on their learning in order to better understand their strengths and weaknesses and set goals and develop action plans for improvement (González, 2009;Rhodes, 2010;Schmitz et al., 2010;Meyer et al., 2011;Crist and Scaffa, 2012). Hence, portfolios have the potential to stimulate and facilitate the development of self-awareness and self-directed characteristics (David et al., 2001;Supiano et al., 2002;Barrett, 2010;Welsh, 2012;Yastibas and Yastibas, 2015).

2.4.2 Constructivism

Pedagogically, preparing a portfolio is considered as a constructivist learning activity (Paulson et al., 1991;Barrett and Carney, 2005;Mazlan et al., 2015). Similar to Knowles theory of andragogy, the constructivist learning theory places an emphasis on the learner being actively involved in the learning process (Von Glasersfeld, 1989;Wertsch, 1997;Applefield et al., 2000;Reinders, 2010). The constructivist approach to learning emerged from the work of previous psychologists, such as, (Bruner, 1966), Piaget

(1973) and (Vygotsky, 1978) who proposed that human learning is constructed, in that learners construct new knowledge and make new meanings upon the foundation of their previous learning. According to this perspective, the role of the educators is facilitating and promoting experiences that lead to growth (Phillips, 1995;Applefield et al., 2000;Ornstein and Hunkins, 2004).

According to the constructivist learning approach, making new meaning and constructing new knowledge require learners to articulate and reflect on their previous experiences and existing knowledge (Bereiter, 1994;Jonassen et al., 1995;Duffy and Jonassen, 2013). It is through the reflection on existing knowledge to create new knowledge that learners will be able to advance their cognitive structure (Reinders, 2010). This means that learners are not just passive receivers of knowledge rather they become active, reflective, knowledge builders and information architects (Phillips, 1995;Stefani et al., 2007;Wang, 2014). Learning environments are to be considered constructivist only if they enable learners to construct their own meaning and understanding of what they learn and experience instead of encouraging them to rely on the teachers' knowledge and interpretation (Jonassen et al., 1995;Leask and Younie, 2001;Huang, 2002;Noel, 2015).

Learning portfolios provide a constructivist learning environment for students where they can actively engage in their learning through discovery, reflection, reasoning discussion, and collaborative reflection (Wong et al., 2007;Stefani et al., 2007;Buzzetto-More, 2010;Mazlan et al., 2015). They enable students to take charge of collecting evidence of their learning, reflect on their work and

experience, think about what they have learned and link it to their prior learning, identify their future learning needs and set goals and make plans for improvement accordingly (Paulson et al., 1991;Tiwari and Tang, 2003;Zubizarreta, 2008;McMullan, 2008;Pincombe et al., 2010;Thanaraj, 2012). They also enable students to collaborate and share their work and knowledge with others and receive feedback which they can use to build and broaden their knowledge (Zhang et al., 2010;Huang, 2012;Oakley et al., 2014).

Wang (2007), in his qualitative case study to investigate the students' roles and attributes in the development of an electronic portfolio, concluded that portfolio development was consistent with constructivist learning theory. The findings of the study indicated that the process of creating the portfolio enabled students to shift from being passive to being active, independent learners who autonomously can construct their own learning. It was through the ability to autonomously make decisions regarding the selection and presentation of evidence as well as the interaction with others, knowledge was created or modified. In summary, the process of creating portfolios allows students to be the driving force of their learning through forcing them to continuously construct and revisit their own knowledge and beliefs depending on what they already know and had experienced (Barrett, 2005;Wang, 2007;Stefani et al., 2007).

2.4.3 Experiential learning: Kolb's learning cycle (1984)

The use of portfolios lies also in the experiential learning approach where learners are actively engaged in direct experiences, critical analysis and reflection to transform these experience into learning (Brown, 2002;McMullan et al.,

2003;Dearman et al., 2014). While there are several models of experiential learning, Kolb's (1984) model of experiential learning is the most widely known and used as a conceptual basis for the process of developing a portfolio (Brown, 2002;Gray, 2008;Brown, 2010;Andre and Heartfield, 2011). As shown in figure 2.1, Kolb's model is expressed as four-stage cycle of learning in which learner's "concrete experience" provides a basis for "observations and reflections" on the nature and meaning of the experience. These reflections are then assimilated into new "abstract concepts" or modified the existing ones to form a "generalization" about the experience. Then, learners can "actively experiment" these concepts and apply them to new experiences (Kolb, 1984).

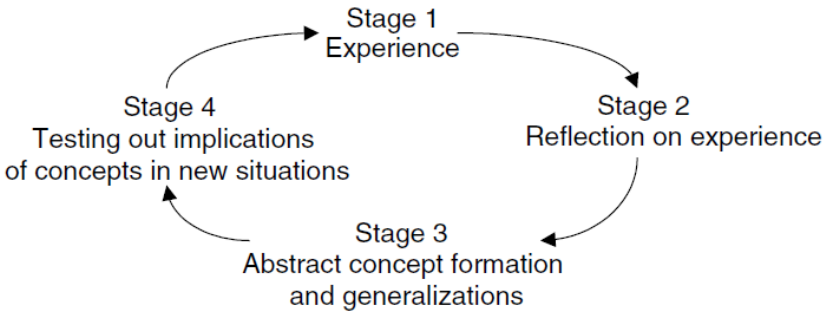


Figure 2.1: Kolb's experiential learning cycle

Kolb's model suggests, and others concur, that any experience, whether in classrooms, practice or online, cannot be considered a learning experience without critical reflection (Boud, 1993;Brown, 2002). As John Dewey once said, "We do not learn from experience … we learn from reflecting on experience." (Dewey, 1933, p.78). Similarly, Gibbs (1988) added that "It is not sufficient simply to have an experience in order to learn. Without reflecting on this experience it may quickly be forgotten, or its learning potential lost. It is from

the feelings and thoughts emerging from this reflection that generalisations or concepts can be generated. And it is generalisations that allow new situations to be tackled effectively." (Gibbs, 1988, p.9).

That being said, portfolios are described as flexible tools that invite students to actively engage in a process of critical reflection on their experiences and self-evaluation of their own progress and development (Zubizarreta, 2008). Writing reflection is considered to be a critical component of any portfolio development (Green et al., 2014). However, it is not the product that makes a portfolio a powerful reflection tool, rather it is the process of developing it that provides students with an appropriate context in which they can freely and consciously reflect on their experiences and analyse their collection of evidence that represent those experiences (Cambridge, 2001;Chen et al., 2005). This reflective component in the portfolio also prompts students to make meaningful connections between different learning experiences— For instance, connections between experiences acquired from practice settings and those acquired in classrooms. Hence, students can test and apply theoretical concepts into new experiences in practice and draw connections between theory and practice (Murray, 1994;Joyce, 2005;Brown, 2010).

2.4.4 Reflection and reflective practice

Reflection, besides being an essential stage in Kolb's learning cycle, is regarded by many authors as an essential characteristic of professional competence and a foundation of continuous development (Argyris and Schön, 1974;Boud et al., 1985;Challis, 1999;Mann et al., 2009). Reflection is considered as a process or activity that is central to promote

practice (Dewey, 1933;Loughran, 1996;Bolton, 2005;Johns, 2013) and prepare healthcare professionals to address and adapt to today's complex and changing healthcare environment (Mann et al., 2009;Jasper et al., 2013). It has been a formal requirement that nurses and other healthcare professionals provide evidence of reflective practice as a part of their licensing, continuous professional development, and revalidation processes (NMC, 2004;HPC, 2004;GMC, 2004). Thus, they are always encouraged and are expected to be reflective practitioners (Somerville and Keeling, 2004;Finlay, 2008;Johns, 2013).

An early definition by Dewey (1933) described reflection as ''an active, persistent and careful consideration of any belief or supposed form of knowledge in the light of the grounds that support it and the further conclusion to which it tends'' (p.9). This definition shows that being reflective means that individuals need to deliberately and constantly contemplate and examine their knowledge, assumptions, values and beliefs in order to learn, change and develop (Jiang, 2013). Reflection is mainly associated with the act of thinking and contemplating about one's thoughts, experience, events, and behaviours (Leitch and Day, 2000). It requires individuals to think about what they have done, why they have done it, and what were the outcomes (Bullock and Hawk, 2005). By doing this, they can gain a deeper understanding of their experience, better understand themselves as learners, build on their existing strengths and work on their weaknesses, thus, take appropriate future actions (Somerville and Keeling, 2004;Mann et al., 2009;Paterson and Chapman, 2013).

Reflection is widely acknowledged as an essential element of the portfolio development (Green et al., 2014;Tisani, 2008).

As mentioned earlier in this chapter, without reflection, the portfolio is no more than just a scrapbook that does not give any insight into the collection of evidence included. It enables students to explain and articulate the purpose and value of each piece of evidence in the portfolio (Kovalchick and Dawson, 2004;Bullock and Hawk, 2005;Barrett, 2010). Equally important, the portfolio itself provides students with the means as well as the space to view a comprehensive and cohesive picture of their learning hence be able to review and reflect on their own progress and development (Challis, 1999;David et al., 2001;Barrett, 2005). The process of creating a portfolio also stimulates students to reflect as stated by Wolf and Dietz (1998):

> "A portfolio is reflective. More than anything else, the portfolio process should inspire reflection— alone and in the company of others, in writing and in conversation…Reflective commentaries by the portfolio owner are essential companion pieces to artifacts…With reflection, the portfolio can become an episode of learning; without reflection, the portfolio may be little more than an exercise in amassing papers" (p.14)

2.4.4.1 Models and conceptions of reflection

The demand for better reflective practice has tended to generate more models, conceptions, and typologies of reflection that are still actually relevant across different professional boundaries (Fook et al., 2006;Finlay, 2008;Johns, 2013;Barksby et al., 2014). In this section, the most common reflection models and typologies are presented.

Schön's (1983) concept of reflection-on-action and in-action

Dewey's ideas about reflection provided a basis for the concept of "reflective practice" and "reflective practitioner" which were coined and popularized by Schön (1983). In his book, "The reflective practitioner: how professionals think in action", Schön (1983) defines reflective practice as a thoughtful process by which practitioners become aware of their tacit knowledge and apply it to practice in order to gain a deeper understanding of their experience. He also asserts that practitioners need to reflect on their experience in different ways at different times depending on the context that may demand a certain type of reflection (Schön, 1983;Leitch and Day, 2000). Schön (1983) identifies two fundamental forms or types of reflection: reflection-on-action and reflection-in-action. In reflection-on-action, practitioners deliberately look back and analyse their experiences and actions that have occurred in the past in order to learn and gain new insights, hence, improve their future professional practice (Schön, 1983;Finlay, 2008;Schön, 1987). With reflection-in-action, on the other hand, practitioners reflect on their experiences and actions as they occur. They attend to what they see and feel in their current situation, focusing on and thinking about their responses and linking it to their prior experiences (Schön, 1983;Schön, 1987;Lyons, 2010). In short, reflection-on-action refers to a post hoc process of reflection (thinking after the event) while reflection-in-action refers to a real time process of reflection, thinking on one's foot and improvising on the spot (thinking while doing). However, both are interconnected and take place in a cyclical manner. (Schön, 1983;Stickley and Basset, 2007;Finlay, 2008;Lyons, 2010).

Schon introduced the concept of "professional artistry"— a concept he contrasted with "technical rationality", as a base for gaining and applying professional knowledge in experience Schön (1983,1987). Technical rationality is a positivistic approach to professional practice whereby practitioners can solve problems by following a set of procedures and rigorous application of scientific methods (Thompson and Thompson, 2008). This approach appears to favour the use of established protocols in all situations over the intuitive thinking of practitioners (Finlay, 2008). A modern example of the technical rationality approach is the evidence based practice and best practice movement (Finlay, 2008;Knott and Scragg, 2016). Schon criticises this approach because it does not "account for practical competence in divergent situations" (Schön, 1983, p 49). He argues that knowledge that is derived from this approach is context-free and ignored the context of real practice, while, professional practice is complex, challenging, diverse, messy, and unpredictable. Thus, in order to understand and learn from such complex experience, practitioners need to be able to do more than just follow a set of rules and procedures (Schön, 1983;Stickley and Basset, 2007;Green et al., 2014).

Practitioners, from Schon's perspective, do not make decisions based solely on technical rationality, rather they draw on both their knowledge base as well as their practical experience (Fook et al., 2006;Stickley and Basset, 2007;Green et al., 2014). For this reason, Schon rejects the idea of using technical rationality as the foundation of professional knowledge and practice. Instead, he advocates the use of professional artistry approach which focuses more on the value of the insights that come from practitioners'

direct involvement in experience (Schön, 1983;Schön, 1987;Green et al., 2014). He went on to describe professional artistry as the "kinds of competence practitioners sometimes display in unique, uncertain, and conflicted situations of practice" (Schön, 1987, p.22).

According to Schön (1983,1987), reflection-in-action and reflection-on-action, together, form the "professional artistry" of the reflective practitioner. They are both needed if practitioners are to practice effectively, learn from their experience, refine their actions and adapt practice accordingly instead of just repeating the same actions in every experience (Finlay, 2008;Barker, 2009).

Moon's conception of reflection

While Schön (1983) focuses on the role of reflection in the development of professional knowledge, Moon (1999a) focuses more on the relationship between reflection and learning and its role in the learning process. Moon describes reflection as "a form of mental processing— like a form of thinking— that we use to fulfil a purpose or to achieve some anticipated outcome. It is applied to relatively complicated or unstructured ideas for which there is not an obvious solution and is largely based on the further processing of knowledge and understanding and possibly emotions that we already possess" (Moon, 2004, p.84).

Moon's work on reflection is informed by the surface-deep continuum of approaches to learning that was developed by Marton and Säljö (1976), Biggs (1987), and Entwistle (1997). This continuum starts with a "surface" approach to learning on one end and a "deep" approach to learning on the other end. A surface approach to learning is where the learner is

only concerned with memorizing the facts and the superficial aspect of the material, not trying to link it to previous knowledge and understandings. A deep approach, on the other hand, involves learners seeking to understand the meaning of the material and integrate it into previous knowledge and ideas. In this deep approach, knowledge is analysed and evaluated, links and patterns are identified, and understanding is altered if necessary (Entwistle, 1997;Moon, 2004). Informed by these two approaches to learning, Moon (1999b) identifies five stages of learning along the continuum. The first two stages 'noticing' and 'making sense' are described as surface learning and guided by the learners current cognitive structure. In the third stage, 'making meaning', potential for deep learning arises when learners understand the new material and accommodate it to their existing knowledge and understanding. The fourth and fifth stages, "working with meaning" and "transformative learning", are described as deep learning stages where Moon underlines the role and importance of reflection. In these last two stages, leaners deeply understand the new material and can use it to alter and restructure their cognitive structure (Moon, 2004;Taylor et al., 2015).

Reflection is regarded as an effective learning strategy that can promote these deep approaches to learning (Moon, 1999b;Murphy and Calway, 2007;Zubizarreta, 2008;Paterson and Chapman, 2013). The key role of reflection in engaging learners in deeper and meaningful learning is underlined by Moon (2005) who asserts that :

> "Reflection is not just an 'add-on-extra' to academic learning, but it is an essential component of good quality learning and the representation of that

> learning…Relating new material to what one knows already may mean reflecting on what one knows and modifying it (deep approach)" (p.2)

Other reflection models and frameworks

Inspired by Dewy, Schon and Moon's work on reflection, a number of models, sometimes known as frameworks, have been proposed as tools for structured reflection across different professional disciplines (Finlay, 2008). Examples of these models are: Borton (1970), Boud et al. (1985), Gibbs (1988), Atkins and Murphy (1993), and (Johns, 2013). The stages of reflection in each of these models are shown in table 2.1. These models vary in their structure, format, complexity, and level of description and criticality needed to reflect on an experience (Jasper, 2003;Forrest, 2008;Barksby et al., 2014). However, most of them are cyclical in nature and tend to focus on reflection as a being retrospective activity. They act as a structured forms to guide the process of reflection (Finlay, 2008;Johns, 2013).

Different reflection models are needed for different types of learners, at different stages, and for different professions (Finlay, 2008;Jasper et al., 2013). Learners may be asked to use a specific model or they can choose to use one based on their personal preferences (Barksby et al., 2014). However, if used unthinkably without knowing the purpose and perspective of each model, they defeat the purpose and make reflection more superficial and mechanical (Johns, 2013). Therefore, reflection models should be used purposefully, selectively and thoughtfully (Finlay, 2008;Johns, 2013;Threlfall, 2014).

2.5 Professionalism and reflective practice

Reflective practice is increasingly seen as a key for both the development and maintenance of professionalism. It is considered as a necessary component of becoming a professional (Lundberg, 1991;Wear, 1997;Finlay, 2008;Horlick et al., 2009). While the acquisition of knowledge and technical skills is essential in all healthcare professions, including nursing, demonstrating the attitude and behaviours of a professional is equally important (Adams and Miller, 2001;Morrow et al., 2011). Nurses are expected to apply and demonstrate the attributes of professionalism in their everyday practice (Miller, 1988; Sullivan, 1995;Adams and Miller, 2001;NMAHP Professionalism Report, 2012).

There are different perspectives on what professionalism means in different fields, however, all definitions imply that professionalism encompasses a number of general different behaviours and attributes that together define a professional (Young et al., 2009). As early as 1910, Abraham Flexner studied a wide variety of disciplines including medicine and identified several attributes that define the core characteristics of professionalism, which are still valid until today and can be applied to a variety of professions.

Table 2.1: Examples of reflection models

Borton (1970)	**Boud's et al (1985)**	**Gibbs's reflective cycle (1988)**	**Atkins and Murphy (1993)**	**Johns (2013)** **16th edition**
1- What? This is the description and self-awareness level of reflection. This includes describing the event/experience in details by asking questions as: what happened? What did I and others do? **2- So what?** This is the analysis and evaluation level of reflection. This level includes looking deeper at the meaning behind the experience/event. Examples of helpful questions include: So	**1- Experience(s)** - Behaviour - Ideas - Feelings **2- Reflective processes** - Return to experience. - Attend to feelings - Re-evaluation of the experience' **3- Outcomes** - New perspective - Change in behaviour - Readiness for application - Commitment to action	**1- Description of the event:** what happened? **2- Feelings:** what were you thinking and feelings? **3- Evaluation:** what was good or bad about the situation? **4- Analysis**: what sense can you make of the situation? **5- Conclusion**: what else you could have done?	**1- Awareness** of uncomfortable feelings and thoughts **2- Describe the situation** including feelings, thoughts, salient events and key features. **3- Analyse feelings and knowledge relevant to the situation:** identify knowledge, challenge assumptions, imagine and explore assumptions. **4- Evaluate the relevance of knowledge**: does it help to explain/solve	**1- Preparatory phase** - Bring the mind home **2- Descriptive phase** - Focus on description the experience **3- Reflective phase** - How did I and others feel and respond to a particular situation? Why did we feel that way? - What assumptions governed my practice and influenced the way I felt and responded. - What were the consequences of my actions?

what is the importance of this experience? What is my understanding of it? What have I learnt? What more do I need to know about it? What could I have differently? **3- Now what?** This is the synthesis and action oriented level of reflection. This includes asking questions such as what actions do I need to do to make things better? What might be the consequences of these actions?		**6- Action plan**: if it arose again, what would you do?	the problem? How complete was your use of knowledge? **5- Identify any learning** which has occurred?	- How does this situation connect with previous experiences? **4- Anticipatory phase** - How I might reframe the situation in order to respond more effectively? - What would be the consequences of responding differently? - What factors might constraint me responding in new ways? **5- Insight phase** - What insight have I gained?

Examples of these attributes are autonomy, specialized knowledge, competence, commitment, transparency, integrity, altruism (Flexner, 2002). In nursing, Barbara Miller made a significant contribution to the knowledge on professionalism when she developed a model called the "wheel of professionalism in nursing" (Miller, 1988). The hub of the wheel depicts two essential attributes Miller considered necessary to demonstrate professionalism in nursing: education in a university setting and a scientific background in nursing. The spokes of the wheel represent behaviours and characteristics of a professional nurse. These behaviours are: 'Autonomy and Self-regulation', 'Adherence to Code for Nurses', Development and use of Theory and Research', 'Professional Organization Participation', 'Community Service Orientation', 'Continuing Education and Competence' and 'Publication and Communication' (Miller, 1988).

Over the last decades, there have been several attempts to provide a broader yet sufficiently detailed definition of professionalism to guide healthcare professionals in today's complex healthcare environment (Salloch et al., 2016). A well-known example is Swick (2000) who developed a normative definition of medical professionalism which can be applied to other healthcare professions. Swick described medical professionalism as "a spectrum of behaviours that individual physicians should demonstrate if they are to successfully meet their obligations to their patients, to their communities and to their profession" (Swick, 2000, p 616). All professional attributes and behaviours should be incorporated in all aspects of the professionals' job including their relationship with patients and their relatives, with their colleagues, managers, and organizations (Young et al.,

2009;Alidina, 2013). Patients and other service users expect professionals to demonstrate certain professional attributes while they providing care (Alidina, 2013).

There has been a growing evidence that professionalism has become an important subject that should be addressed and taught explicitly to students and practitioners (Cruess and Cruess, 1997;Swick et al., 1999;Whitcomb, 2002;Cruess and Cruess, 2012). Students need to develop appropriate professional attitudes, behaviours and identity as equally as learning clinical knowledge and skills in order to attain professional competence (Shumway and Harden, 2003;Rejon and Watts, 2013). Developing these attitudes and behaviours in students is vital because it can help to produce safe practitioners who are prepared to meet the demands and expectations of the societies they serve (Wynd, 2003;Papadakis et al., 2004;Mossop and Cobb, 2013).

Until the last decade, professionalism was taught and learnt through role models where students learn appropriate professional attitudes and behaviour by shadowing and observing practitioners in clinical placements (Wright et al., 1998;Kenny et al., 2003;Cruess and Cruess, 2008;Cruess and Cruess, 2012). While role-modelling is still a powerful method to learn and teach professionalism, relying solely on it is no longer sufficient because of the possible adverse effect of negative role modelling — role models who do not meet the desirable professional standards (Cruess and Cruess, 1997;Cruess and Cruess, 2012). It has been therefore recommended that the use of role models should be combined by other active learning methods such as experiential learning and reflective practice (Coulehan,

2005;Huddle, 2005;Cruess and Cruess, 2006;Wald et al., 2009;Cruess and Cruess, 2012).

Evidence from previous studies suggest that reflective practice plays a valuable role in fostering the development of professionalism in healthcare professions (Branch Jr et al., 2001;Hill-Sakurai et al., 2008;Horlick et al., 2009). Students should be exposed to a wide variety of clinical experiences where they are encouraged to reflect on what they have observed in practitioners' behaviours. The act of reflection helps student to recognize both appropriate and inappropriate professional standards, behaviours and attitudes thus identify for themselves what constitutes professional behaviours (Shapiro et al., 2006;Wald et al., 2009;Cruess and Cruess, 2012).

Inquiring into in the literature, portfolios are one of the possible tools and methods that can be used as an effective way for facilitating learning and assessment of professionalism (David et al., 2001;Lee et al., 2007;Kalet et al., 2007). Developing a portfolio encourages students to reflect on the process of becoming a professional; identify their strengths and areas that needs development and plan for improvement. It also provides them with a repository in which they can gather a tangible evidence of their development of professional attitudes and behaviours (Lee et al., 2007;Kalet et al., 2007;Dannefer and Prayson, 2013). For assessment, portfolios can be a powerful tool for assessing the excellence and deficiencies related to students' professional development (David et al., 2001;Kalet et al., 2007). The variety of evidence students include in their portfolios accompanied by critical self-reflection on their development, when reviewed by assessors, has the potential

to show whether students succeeded or failed to learn the desired professional behaviours and values (Kalet et al., 2007;Lee et al., 2007). The portfolio assessment process provides both students and educators a safe way to identify any inappropriate behaviours and attitudes in practice and set plans to correct them (David et al., 2001).

2.6 Hidden curriculum in healthcare professional education

A great emphasis has been placed on integrating professionalism into the curricula of many educational programs in nursing and other healthcare professions. In these curricula students are explicitly taught the ideal professional behaviours which they should strive to achieve and demonstrate in their practice (Branch Jr et al., 2001;Gracey et al., 2005;Masella, 2007;Mossop and Cobb, 2013). In clinical training, students are exposed to a wide variety of experiences where they see a range of good role models who demonstrate excellent professional standards. However, because of the unpredictable and diverse nature of clinical environment students also might meet some negative role models whose attitude and behaviours conflict with what they are being explicitly taught about professionalism in classrooms (O'Sullivan et al., 2012;Gaiser, 2009). This means that students learn professionalism not only from the formal explicit curriculum but also from the community of practice in which they participate (Gaiser, 2009;Mossop and Cobb, 2013;Langendyk et al., 2016). This has been known as hidden curriculum (Hafferty and Franks, 1994;Stern, 1998).

Hidden curriculum can be defined as "a set of influences that functions at the level of organizational structure and culture" (Hafferty and Franks, 1994, p.404). Hidden curriculum

encompasses various influences such as role models, unwritten and unofficial cultural and social rules, rituals, regulations, values, perspectives, and norms (Hafferty and Franks, 1994;O'Sullivan et al., 2012). It is possible that these influences undermine the process of learning and developing appropriate professional behaviours especially if they are inconsistent with what is taught in the formal curriculum (Pololi and Price, 2000;D'eon et al., 2007). In a survey study conducted in 23 medical schools in the UK, the researchers reported that the hidden curriculum lessened the effectiveness of the formal teaching of professionalism through giving the students conflicting messages to what was taught. Thus, the influence of hidden curriculum should not be underestimated (Stephenson et al., 2006).

In any educational program that espouses professionalism, the hidden curriculum must be addressed to reduce its undermining effect to ensure the desired professional behaviours and values are fostered (Cruess and Cruess, 2012). A number of strategies haven been identified in the literature to facilitate unveiling the hidden curriculum (Bogo and Wayne, 2013). Among these strategies is self-reflection which has been recognized for its importance in making the hidden messages, students received during interactions, explicit and subject to analysis and discussion with others (Gaiser, 2009;Gaufberg et al., 2010;Mossop and Cobb, 2013;Langendyk et al., 2016).

In his theory of transformative learning, Mezirow (1997) argues that critical reflection involves learners' critique and interpretation of the assumptions, beliefs, values, ideas, and habits of minds that are tacitly acquired or communicated to them. He asserts that self-reflection can lead to 'perspective

transformation' and challenge learners to see the world from different perspective through revealing inaccurate assumptions and correcting distortions in beliefs (Mezirow, 1990). Therefore, he regards self-reflection as a key characteristic of transformative learning —"the social process of construing and appropriating a new or revised interpretation of the meaning of one's experience as a guide to action" (Mezirow, 1994, p.222). Drawing on this theory, self-reflection empowers students to think critically and question the attitudes, behaviours and values of their role models and challenge the existing cultural norms rather than take them for granted (Bekas, 2013;Langendyk et al., 2016). This way, students are able to distinguish between appropriate and inappropriate behaviours and become aware of the conflicting, perhaps unspoken, messages in clinical practice (Hafferty and Levinson, 2008;Martimianakis et al., 2009;O'Callaghan, 2013). It is therefore reasonable to say that self-reflection enables students to have a true understanding of professionalism and develop their professionally identity (Gaiser, 2009;Mossop and Cobb, 2013).

Portfolios can be valuable tools to track the hidden curriculum as it unfolds (Phillips, 2009). A portfolio provides a safe opportunity for students to reflect on the different types of role models, the positives and negatives, they come across during their clinical training (Wong and Trollope-Kumar, 2014). The reflective narratives in the portfolio can provide a window into how students' develop their professional identity and resist the negative impact of hidden curriculum

2.7 Changes in professional practice across professions

Healthcare professionals, including nurses, have legal and ethical obligations both as a member of their professions and as individuals (Slomka et al., 2008;Bell, 2015). They have significant responsibilities in terms of providing appropriate healthcare interventions with the aim of protecting patients from the effect of illness and disability (Peate, 2013;Andre and Heartfield, 2016). The provision of care has become more complex as professionals practice in an environment of constant change. Changes in healthcare environment have come about for number of reasons, for example, the rapid development and use of technology and pharmacology, the increased vulnerable populations with complex conditions and the constant change in healthcare systems and practitioners roles (Hughes, 2008;O'Grady, 2008;Great Britain: Law Commission, 2012). There has been also some external pressure on healthcare professionals to demonstrate the appropriateness of their clinical and professionals decisions (Flottorp et al., 2010;Andre and Heartfield, 2011). In 2004, the World Health Organization (WHO) launched the World Alliance for Patient Safety to protect patients from any potential harms of treatment (World Health Organization, 2004). In response, many countries have established a range of national healthcare safety and quality mechanisms with a clear message that professional competence and ongoing education impact directly on patient safety (Porter, 2008;Andre and Heartfield, 2016).

It is, therefore, deemed important for professionals to develop and constantly update their professional knowledge and competence to cope with these demands and the

complexities of modern professional practice in order to provide safe and effective care (Gallagher, 2007;Birchenall and Adams, 2011;Giri et al., 2012). Professionals, therefore, need to become lifelong learners and, in doing so, they must engage in continuing professional development (CPD), reflect on their own practice and take action to address identified learning needs (Comfort and Abrahamson, 2010;Neimeyer and Taylor, 2012). CPD includes all the activities, both formal and informal, that healthcare professionals undertake to develop, enhance and build on their existing knowledge and skills (Gitonga and Muriuki, 2014). CPD is "a systematic and ongoing process of education, in-service training, learning, and support activities that build on initial education and training to ensure continuing competence, extend knowledge and skills to new responsibilities or changing roles, and increase personal and professional effectiveness" (Giri et al., 2012, P.1).

Pre-registration education prepare professionals for practice at the time of registration, whereas CPD is considered as an integral requirement for the process of revalidation or renewal of registration in order to remain registered (Kostrzewski et al., 2008;Birchenall and Adams, 2011). All professional bodies and associations around the world set out specific standards and expectations for healthcare professionals to meet in order to ensure protection of the public. Accordingly, all healthcare professionals have an ongoing responsibility to engage in CPD and lifelong learning in order to meet these expectations and standards (NMC, 2004;GMC, 2004;ANCC, 2014).

One of the effective ways to demonstrate that these standards and requirements are being met is to maintain a

professional portfolio (Birchenall and Adams, 2011;Andre and Heartfield, 2016). Portfolios have a long and reliable history of being used as a useful tool to demonstrate engagement of lifelong learning and continuing professional development (Tochel et al., 2009;Casey and Egan, 2010). Portfolios development are argued to be very useful for CPD and lifelong learning both on the presentational and developmental levels. On the presentational level, they provide evidence of professionals' competency and capacity building. On the developmental level, they engage professionals in an ongoing process of self-evaluation by helping them to reflect on their practice, identify their weaknesses and strengths, recognize and fill in any gaps in their existing knowledge and skills (JISC, 2008a;Love and Cooper, 2010).

Professional bodies in many countries, such as the United Kingdom, the United States, Canada, Australia, and New Zealand are increasingly using professional portfolios as mechanism to assess continuing professional development (Porter, 2008;Kostrzewski et al., 2008;Andre and Heartfield, 2016;ANCC, 2014;NMC, 2016).

In Nursing, the Nursing and Midwifery Council (NMC) in the UK has recently introduced revalidation for nurses and midwifes to strengthen the three-yearly registration renewal process and increase professionalism. The council requires that nurses and midwives keep evidence that they have met the revalidation requirements in their professional portfolio (NMC, 2016). In the United States, the American Nurses Credentialing Center (ANCC) consider portfolios as a valid and reliable method to assess nurses' competence. To be awarded the specialty and advanced practice nursing credentials, nurses are required to submit an online portfolio of evidence

that documents their specialized knowledge, skills, understanding, and application of professional nursing practice and theory (ANCC, 2014).

In medicine, the General Medical Council (GMC) proposed a system of revalidation in which all licensed doctors are required to demonstrate, on a regular basis, that they are up to date and fit to practise in their chosen fields and are able to provide a good level of care. All doctors have to participate in the revalidation every five years in order renew their license. The council require them to maintain a portfolio, paper or online, of supporting information drawn from their practice which demonstrates how they are continuing to meet the professional standards set by the GMC (GMC, 2012). In dentistry, the General Dental Council (GNC) requires all dentists to undertake at least 250 hours of CPD during a CPD cycle (5 years). Dentists are anticipated to maintain a portfolio that include verifiable CPD evidence, training records, evidence of reflective practice, and evidence of meaningful multi source feedback. (GDC, 2009).

The Chartered Society of Physiotherapy (CSP) and the Society of Radiographers (SoR) require their members to satisfy the standards set by the Health and Care Professions Council (HCPC). Both societies have their own an e-portfolio system in which practitioners are required plan and record their evidence of learning from their CPD activities and day to day practice (SoR, 2010;CSP, 2014). In veterinary medicine, the Royal College of Veterinary Surgeons (RCVS) offers an electronic system to aid vets in maintaining the records and documents related to their continuing professional development (RCVS, 2015). In non-health related professions such as teaching profession, there are several

examples of professional portfolios being used as a means to document continuing professional development. For example, the General Teaching Council for Scotland (GTCs) encourages teachers to maintain a portfolio, whether electronic or paper, that demonstrated their commitment to lifelong learning and document their of continuing professional development activities (GTCs, 2013).

(Niemi, 1997;Clandinin and Cave, 2008;Karnieli-Miller et al., 2010)

2.8 Uses/purposes of portfolios

The general literature show that there are three categories or types of a portfolio, based on the author's purpose: portfolio as a learning tool, portfolio as an assessment tool, and portfolio as an employment or marketing tool (Zeichner and Wray, 2001;Wolf and Dietz, 1998;Bullock and Hawk, 2005;Lynch and Purnawarman, 2004;Wilhelm et al., 2006;Barrett, 2005). Each type has a specific purpose, content, and audience.

2.8.1 Portfolios as learning tools

This type of portfolio, frequently referred to as a "process portfolio" as it demonstrates the learners' progress, development, and achievement over time (Lynch and Purnawarman, 2004;Bullock and Hawk, 2005;Smith et al., 2008). The purpose of this type of portfolios is to promote student reflection and ownership over their learning process. Thus, students are given a sufficient freedom to make personal choices of what goes in their learning portfolios (Tillema, 2001;McMullan, 2008;Green et al., 2014). The primary audiences for this portfolio are students themselves (Barrett, 2006;Cambridge et al., 2009).

The strength of a learning portfolio is derived from the process (Smith and Tillema, 2003). The process of developing it is considered as an exercise that can help students to develop skills of critical reflection (Klenowski, 2002;Groom and Maunonen-Eskelinen, 2006;Smith et al., 2008). Developing reflective skills provides students with the ability to self-assess their performance and criticise their own work and hence identify their strengths, weaknesses and learning needs (Harris et al., 2001;Abrami and Barrett, 2005;McMullan, 2008;Van Tartwijk and Driessen, 2009). Students can then use this information to monitor their development and improve their future work, whether on their course of study or in employment, by playing to their strengths, making intelligent decisions about how to satisfy their learning needs, and plan how to overcome their weaknesses (Schön, 1983;Tillema, 2001;Smith and Tillema, 2003;Hagstrom, 2006). Various authors have noted that the reflective and self-assessment components of the portfolio ensure an active involvement of students, increase their self-awareness and help them to develop lifelong learning skills (Barrett, 2006;McAllister et al., 2008;Cambridge, 2010). Learning portfolios, therefore, are thought to promote learner-centred learning approach and provide students the opportunity to assume responsibility of their learning and independently search for meaning (Challis, 1999;Harris et al., 2001;Harden and Laidlaw, 2016).

Given the purpose of this study, a critical review on the use of portfolios as learning tools in undergraduate healthcare education will be presented in chapter 3.

2.8.2 Portfolios as assessment tools

Portfolios have been widely used as assessment tools across range of professions (Challis, 1999;Greenhalgh and Hurwitz, 1999;Pitts et al., 2002;Driessen et al., 2006;Vernazza et al., 2011). The use of portfolios for assessment has developed as an attempt to move away from the "snap shot" type of assessment towards a more cumulative and holistic assessment of the students' competence (Barrett, 2002;Haldane, 2014;Green et al., 2014). With the rapid development of outcome or competency based approach to education, the use of portfolios for assessment is also thought to be useful in assessing areas that are difficult to assess using traditional assessment methods such as professionalism, reflective practice, ethics, creativity and other areas in the "Does" level in Miller's framework (Boyle, 1994;Snadden et al., 1999;Endacott et al., 2004;O'sullivan et al., 2004;Garrett et al., 2013;Harden and Laidlaw, 2016).

Moreover, unlike the traditional assessment methods, portfolios allow students to incorporate and combine different types of evidence from different sources to demonstrate their competence. This triangulation of evidence is thought to help assessors make a valid judgment and reliable interpretation of students' level of competence (Van Tartwijk and Driessen, 2009;Harden and Laidlaw, 2016). Portfolios also allow students to participate in the assessment process. The process of developing a portfolio compels students to focus their attention on the desired learning outcomes and monitor their progress toward achieving them and use feedback from others to improve. This way, portfolios integrate learning and assessment and reinforce the students-centred approach in education with students being given an opportunity to engage

in the assessment process (Banta, 2003;Chang, 2008;Harden and Laidlaw, 2016).

Portfolios are being used for both formative assessment (assessment for learning) — as feedback and discussion tool to help students learn and develop— and summative assessment (assessment of learning) — as evaluation tool to appraise the attainment of the expected learning outcomes or the desired level of competency (Stiggins, 2002;Barrett, 2006;Garrett and Jackson, 2006;Pincombe et al., 2010;Vernazza et al., 2011;Murphy and Smith, 2013). Portfolios are recognized for their formative functions as they can show the learning processes in which students have engaged (Kelly and Haber, 2006;Yang and Wilson, 2006;Strivens et al., 2009). The breadth of information obtained from portfolios may offer a comprehensive picture for students, educators, and other concerns of what students know and can do, their future needs and ongoing learning and development (Challis, 1999;Barrett, 2006;Tucker et al., 2013). This information makes students' progress and achievement more visible and allow educators to provide them with formative feedback in relation to their progress on the attainment of learning outcomes or competencies (Barrett, 2006;Cambridge et al., 2009). Previous studies reported that feedback, from educators or peers, is a necessary element of the process of creating a portfolio as well as for shaping the final product to be summatively assessed (Smith and Tillema, 2003;Driessen et al., 2007;Vance et al., 2013;Webb et al., 2006;Chang, 2008).

The summative portfolio, on the other hand, focuses on and is built around a set of learning outcomes, standards or competencies. It contains evidence that show the

achievement of these outcomes or competencies rather than the processes of learning (Dinham and Scott, 2003;Lorenzo and Ittelson, 2005;Altahawi et al., 2012). Summative portfolios are used to make high stake decisions such as registration, certification for a degree or license to practice, admission into a profession, or accreditation of prior learning (Strivens et al., 2009;Duffy et al., 2010). If portfolios are to be used for summative assessment, criteria for assessment must be clearly stated, well-defined and standardised to ensure objectivity (McMullan et al., 2003;McCready, 2007).

2.8.3 Portfolios as employment or marketing tools

The use of portfolios for employment purposes has increasingly been promoted in recent years (Zeichner and Wray, 2001;Alsop, 2013;Whitworth et al., 2011). Students and graduates can use their portfolios as a marketing tool to show their professional skills and accomplishments to prospective employers (Willis and Wilkie, 2009;Woodbury et al., 2011). A "showcase" portfolio can be compiled and customized to apply for a specific job and can contain specifically selected materials that provide evidence of skills and capabilities matched to each of the criterion listed in the job specification (Wolf, 1999;Cohn and Hibbitts, 2004;Alsop, 2013). The main purpose of employment portfolios is to provide adequate information to prospective employers about the applicant's suitability for a job (Bullock and Hawk, 2005;Ward and Moser, 2008).

Rowh (2008) argues that portfolios go further than traditional resume by showing more in-depth information about one's abilities, skills and potentials. He asserts that electronic portfolios are even more flexible and convenient than paper portfolios as they allow students to showcase their skills and

abilities in more than one medium such as documents, photos and videos. Speaking of the potentials of e-portfolios, Garis (2007) added that:

> "Emerging electronic portfolios hold great promise to change the national and international landscape in offering new internet-based tools to support college student career development. Specifically, career-related e-portfolios enable students to understand, develop, chronicle, and communicate their career attributes to others" (p.3-4).

Studies that have been conducted on the use of e-portfolios in the employment process indicated a promising future of e-portfolios as a job application tools (Yu, 2011;Achrazoglou et al., 2002). In their national survey of 500 the hiring professionals in school districts across the States, Achrazoglou et al. (2002) reported that the majority of the hiring professionals stated that an applicant's e-portfolio can be a significant selection tool of the best candidates along with their credentials, cover and recommendation letters. These findings mirrored those of Yu (2011) who concluded that employers viewed e-portfolios as a significant factor in conducting a preliminary screening of the candidates as well as making a final decision in the final selection process. Other studies reported that employment e-portfolios allowed the prospective employers to obtain a comprehensive picture about the applicants' skills, abilities and characteristics and made these applicants "stand out from the crowd" (Strawhecker et al., 2007;Boody, 2009). However, there are still some drawbacks to the use of portfolios in the employment process, for example, as the limited time allowed for the hiring process and for reviewing the applicants' portfolios, the lack of confidence of the hiring

professionals to use e-portfolios, and the unstructured nature of portfolios (Temple et al., 2003;Theel and Tallerico, 2004;Mosely, 2005;Papa Jr and Baxter, 2008). In general, the use of portfolios as an employment tool is still in the early stage of development and has not been widely explored yet (Whitworth et al., 2011;Yu, 2011).

2.9 The use of portfolio in postgraduate healthcare education

Alongside the rapid growth of portfolios usage in undergraduate healthcare education (as will be presented in chapter 3), their use have expanded to the postgraduate level in healthcare education (Coffey, 2005;Tochel et al., 2009;Kadagad and Kotrashetti, 2013). The literature show that portfolios are used in postgraduate healthcare education mainly to: promote reflection, support learning and continuing development in practice, and to be used as a mechanism for summative assessment.

2.9.1 Promoting reflection

Promoting reflection is one of the most commonly cited purposes for using portfolios in postgraduate healthcare education (Snadden et al., 1999;Austin et al., 2005;Tochel et al., 2009;Dannefer, 2013). There is some evidence that a portfolio works as a catalyst for reflection. For instance, in an experimental study by Keim et al. (2001), using a portfolio to record Continuing Professional Education (CPE) activities appears to have a positive effect on the participants' attitude towards writing reflection. The findings from the 2-year follow up revealed that the dietetic professionals who were in the portfolio group completed significantly more self-reflection entries and developed more learning plans, and even in a shorter time, than those in the control group.

Similarly, in another study by Webb et al. (2006), 72% of the surgical residents who used portfolios for five years reported that the portfolio was a useful tool for developing self-reflective skills and promoting their professional growth. However, interaction and feedback from faculty were identified as crucial for successful use of a portfolio.

Other studies reported that students' negative attitude towards portfolio in general may have influenced their perception of its benefits regarding reflection. For example, in a study by Hrisos et al. (2008), approximately equal proportions of the trainee doctors who participated in the study either did or did not find the portfolio useful in helping them writing reflection. The researchers reported that many students in this study perceived portfolios as s burden and perhaps this may have overshadowed any perceived educational gain. Similarly, Maidment et al. (2006) reported that some practitioners in their study felt that portfolio was a time consuming exercise that did not bring anything new. The practitioners believed that reflection took place in practice anyway without the need to use a portfolio.

While the previously mentioned studies reported positive or no effect of portfolios on reflection, others reported some negative effects. For example, some pharmacists in the study by Swallow et al. (2006) expressed their concern that using a portfolio could inhibit their ability to reflect openly if their reflection was to be seen by their managers or supervisors. The portfolio was seen as a "big brother watching" threat. In another study, Austin et al. (2005) reported that some participants in their study described themselves as sufficiently self-reflective without the need to use a portfolio. They viewed the process of maintaining a portfolio as a time

consuming exercise that sometimes may interfere with other professional development activities.

2.9.2 Support learning and continuing development in practice

Portfolios are also being used as a learning and continuing development tools in postgraduate healthcare education. Mathers et al. (1999) studied the effectiveness of the learning portfolio approach versus the traditional route to postgraduate educational accreditation (PGEA) on the continuing professional development for General practitioners (GPs). The comparison indicated that the process of creating the portfolio had a positive impact on the GPs learning. For example, compared to the traditional route, the portfolio enabled the GPs to complete more learning cycles — applying new learning into professional practice. This was indicated by the number of critical incidents the GP reported as being significant in modifying their original learning objective. The study also concluded that the portfolio approach enabled the GPs to: be proactive rather than reactive in their learning, have better control over how, when, and what they learn, cover wider study topics and activities, and build personal and professional confidence.

Some studies reported that portfolios have the potential to promote self-directed learning among postgraduates healthcare students. Fung et al. (2000) conducted a multisite study in four Canadian obstetrics and gynaecology schools to determine the effect of internet based portfolio on the residents' perception of their self-directed learning abilities. The residents in the school in which the portfolio was used had a significantly higher perception of their self-directed learning abilities and more positive attitude toward lifelong

learning than the residents in the other schools. The residents also believed that maintaining a portfolio of their diverse clinical experiences would contribute more to their learning and future knowledge than textbooks and didactic lectures. Similarly, Keim et al. (2001) reported that portfolios had a positive effect on the professionals' self-efficacy to perform activities that enhance their self-directed learning skills. The professionals in the portfolio group significantly produced more learning needs assessment and developed more action plans compared to the control group. In general, the professionals believed that maintaining a portfolio for recertification would help in maintaining competence. These results are contrary to those of a relatively recent study by Vance et al. (2013) who reported that the majority of trainees held a negative views of the e-portfolio. They did not find the portfolio useful in enabling them to achieve the learning outcomes or develop as self-directed learners. They viewed it as a time consuming and bureaucratic exercise. The researcher argued that the inadequate feedback, the busy clinical environment, and the lack of understanding of what evidence to include in the portfolio might be the reasons of such negative views.

In nursing, Coffey (2005) evaluated the use of clinical learning portfolio in gerontological nursing by distributing a postal questionnaire to the 22 graduates of the Higher Diploma Program. Some respondents indicated that the experience of completing the portfolio had a tangible effect on their practice. It helped them to link theory to practice and stimulated them to challenge the existing practices and gain new knowledge. It also allowed them to share their learning with their colleagues both in formal or informal manner. They

were also had the opportunity to disseminate their work to a wider part of the team. However, these findings should be interpreted with cautious given the limitation of the study, for example, the sample size was small in a single cohort and the validity and reliability of the questionnaire had not been tested. Speaking of sharing, two studies by Chang (2001) and Ruiz et al. (2009) also demonstrated that e-portfolios were perceived by many students as an effective vehicle for sharing and interaction with others. They appreciated that the portfolio enabled them to record and share their learning efforts and achievements with others and obtain feedback for improvement. By doing so, they were able to understand the strengths and weaknesses of their own work and also the work of others.

In a non-experimental study, Lewis et al. (2010) explored the effect of a designed web-based portfolio system on the ACGGME (Accreditation Council for Graduate Medical Education) competencies. The findings demonstrated that 87% of the residents viewed this portfolio a valuable educational instrument. The findings also indicated that there was improvement in the majority of competencies following the implementation of the portfolio system. This improvement was attributed to the nature of the portfolio system that was designed to foster reflective practice and lifelong learning, utilize self-assessment, reflection, and formative feedback from mentors

2.9.3 A mechanism for summative assessment

Several healthcare postgraduate and residency programs are using portfolios as tools to summatively assess the competence and professional development of postgraduates and healthcare professionals in practice (Carraccio and

Englander, 2004;Joyce, 2005;Tochel et al., 2009). The research in the area of portfolios and assessment demonstrate that there are some concerns regarding the validity and reliability of portfolio assessment (Pitts et al., 1999;Pitts et al., 2002;Joyce, 2005;Driessen et al., 2007;Grant et al., 2007) and the influence of assessment on portfolio content (Tillema, 2001;Maidment et al., 2006).

In an early study, Pitts et al. (1999) reported a low interrater reliability between the experienced general practice trainers when assessing the portfolios of prospective trainers. The assessors could not make an accurate summative judgment due to the highly individualistic nature of the trainers' portfolios. In a systematic review of using portfolio assessment in medical education by Driessen et al. (2007), some studies were examined for the interrater reliability of portfolio assessment. The estimated average reliability across these studies was 0.63. They suggested that increasing the number of raters would increase the reliability to 0.8 — the value that is normally required in high stakes assessment (Tate et al., 1999;O'sullivan et al., 2004;Melville et al., 2004;Rees and Sheard, 2004;Grant et al., 2007). These studies also reported some measures that could increase the agreement between assessors, for example, training the assessors, discussion between the assessors before and after assessing the portfolio, and the use of global criteria with rubrics.

Pitts et al. (2002) looked at the reliability in the assessment of portfolios with eight experienced GP trainers. They reported that the reliability improved through the open discussion between random pairs of assessors. They argue that open discussion between assessors may reduce any bias

or subjectivity through making explicit the beliefs, values, assumptions assessors may hold any or any personal agendas they may carry. They also advocate, and agree with others, that the subjective and open narrative nature of portfolios call for a system of assessment that is more interpretivist rather than a reductionist or positivistic in nature (Challis, 1999;Greenhalgh and Hurwitz, 1999;Pitts et al., 2002;Driessen et al., 2006). Similarly, Webb et al. (2003), in their study, point out that "portfolios usually contain qualitative rather than quantitative evidence and assessors make qualitative judgments about this evidence taking into account what they have learned about the student in a more or less extensive relationship throughout the placement" (p.608). Therefore, they concluded that rather than striving to apply the concepts of reliability and validity in a quantitative way, qualitative criteria such as credibility, transferability, dependability and confirmability can be used instead to assess portfolios in a holistic and qualitative way, taking into account the subjectivity of the assessors.

With regard to the validity of portfolios, O'sullivan et al. (2004) examined the reliability and validity of the portfolios used to demonstrate competency of eighteen psychiatric residents. Scores of the portfolios were compared to other assessment methods. They found that performance on the portfolio was modestly correlated to cognitive performance while it was less correlated to clinical performance. Given these findings, they concluded that the portfolios could provide valid evidence of competency although the evidence is weak.

On the other hand, other studies expressed more concerns about the validity of portfolios as assessment tools. For

instance, In a pilot study by Maidment et al. (2006), many dental practitioners expressed some significant concerns about the validity of the portfolio to be used as an assessment tool for revalidation. One of them said "*Revalidation (using a portfolio) doesn't prove you are a good dentist or a safe dentist, it proves you can fill in a book.*' In an earlier study, Smith and Tillema (2001) investigated portfolio use among different professionals in different settings which included senior nurses leaders and staff nurses. According to some participants in their study, when portfolio was used for assessment purposes, the evidence included were likely to have a questionable validity with regards to their originality, quality. These findings seem to support the arguments of many authors who propose that there might be a negative relationship between the use of portfolios for summative assessment purposes and the honesty and quality of entries, especially reflective entries (e.g. Gannon et al., 2001;McMullan et al., 2003;Schaffer et al., 2005;Joyce, 2005;Timmins and Dunne, 2009;Van Tartwijk and Driessen, 2009;Tonni and Oliver, 2013). As a result, the content validity of the portfolio as an assessment tool might be an issue (Gannon et al., 2001).

It has been argued that using portfolios for assessment purposes may limit the type and jeopardise the quality of reflection students generate during the process of developing their portfolio (Challis, 1999;McMullan et al., 2003;Joyce, 2005). Students may omit or reduce aspects of their reflection whether to meet the specified criteria against which assessment takes place or to avoid exposing their weaknesses to their assessors (Van Tartwijk and Driessen, 2009;Timmins and Dunne, 2009). The danger here is that the

omitted parts of their reflection may have their greatest developmental needs or achievement. This means that they creating a portfolio that only satisfies the assessors' requirements but does not necessarily meet their own learning needs (Challis, 1999).

CHAPTER THREE: CRITICAL REVIEW

3.1 Introduction

This chapter presents a review of the empirical research published in peer-reviewed journals on the pedagogical value of e-portfolios as learning tools in undergraduate nursing education and related health care disciplines (e.g. medicine, midwifery, dentistry, physiotherapy and radiography). Moreover, a review of literature on the paper-based portfolio in undergraduate nursing education was undertaken in order to provide a full background to the study and inform the development of e-portfolio in nursing.

The first section in this chapter presents the methodology of the review, whose findings are presented thematically in the second section. The final section discusses the gap in the literature where further research is required.

3.2 Methodology of the literature review

The approach for conducting this critical review was derived from the appraising tool of Hawker et al. (2002), which provided a systematic and organized framework that allowed for using evidence from different perspectives, with critical assessment of their quality.

3.1.1 The review question

What are the pedagogical values of the e-portfolio as a learning tool for undergraduate nursing students and other healthcare students?

3.1.2 Methods of literature review

For the purpose of this literature review, the review question was broken into four manageable parts using PICOS elements (Jasper, 1995):

- Population (undergraduate nursing students and any heath care students);
- Intervention (e-portfolio in nursing or any health care discipline and paper portfolio in nursing);
- Comparison (not applicable);
- Outcome (pedagogical value or educational effect); and
- Study design (any type).

3.1.3 Stages of literature search

The literature review was conducted over three stages:

The first stage

This stage involved a wide search in the literature to locate as many papers as possible to be included. Eleven databases were selected because of their relevance to the topic under review: CINAHL, Medline, EMBASE, PsycInfo, Web of Science, ERIC, British Education Index (BEI), Australian Education Index (AUEI), Applied Social Science Index and Abstracts (ASSIA), Higher Education Academy (HEA). Moreover, a hand search in some key journals was conducted. The following are the search terms used:

- portfolio* e#portfolio* eportfolio* electronic portfolio* digital portfolio* or web based portfolio* webfolio*
- learn*or education or pedagog* or train* mento or tutor* or teach* or reflect* or knowledge or skill* or
- experience or perspective or perception student* or learner* or undergraduate* student portfoli health or dent*or dental education or medic* or medical education or physio* or midwife*or Midwifery education

No restriction was applied on the date of publication or study type, but the search was limited to papers published in English. All the papers identified in the search were saved into the reference manager Endnote. The literature search initially identified 625 full articles after removal of all duplicates.

The second stage

In this stage the 625 articles were assessed for their relevance to the review question through reviewing their title and abstract against set of inclusion and exclusion criteria (see table below 3.1). After examination of the papers' titles and abstracts, only 101 papers met the inclusion criteria.

Table 3.1. Inclusion and exclusion criteria of studies

Criterion	**Inclusion**	**Exclusion**
Population	- Undergraduate nursing and other healthcare students	- Postgraduates or continuing professional training or education
Intervention	- Portfolio (paper based or electronic) documenting students' learning and required students to reflect on their learning experiences	- Personal development planning or logbook - Professional portfolio - Summative assessment and grading issues such as reliability and validity
Study design	All designs included	Non-empirical articles

The third stage

In this stage, the 101 papers were read in full and only 40 were found to be relevant to the review questions. Data extracted from these studies was processed into tables for comparison and analysis, then the findings from all the papers were synthesized to produce the narrative review. The derived themes developed from the synthesis process are discussed in the following sections.

3.3 Key findings of critical review

Two main themes were developed from synthesizing the literature: paper based portfolio and e-portfolio. There are two categories under each theme: the pedagogical value and limitations. These themes and categories are discussed below in detail.

3.1.1 Paper-based portfolios

The use of portfolios began to emerge as an educational issue in nursing literature from the late of 1980s (Garrett and Jackson, 2006). In countries such as the UK, US and Australia, a portfolio is considered a compulsory requirement for on-going registration of nurses. Nurses are required to demonstrate their competence through creation of a portfolio that shows their professional development. The same idea was adopted by nursing schools, who started to use portfolios as an assessment and learning tool for preparing undergraduate nursing students for their professional roles (Harris et al., 2001;Timmins and Dunne, 2009).

Despite this adoption, a lack of uniformity in the definition of portfolios was found in nursing literature due to the significant diversity in its purpose, design and application among different nursing programs (Pincombe et al., 2010).

3.1.1.1. The pedagogical value of paper-based portfolios

Portfolios in nursing education are used for documenting and demonstrating professional and personal development. They are interrelated and intertwined, and collectively transform students' learning (McMullan et al., 2003). (Barber, 1992, P.22) stated that:

> "personal development cannot be separated from professional development; each rests upon the other. Show me how well you share of yourself, understand your personal processes and are able to communicate this to others, and I'll know how good or bad your nursing care is".

Portfolios for professional development

For professional development, portfolios were introduced in nursing education as assessment tools to integrate theory and practice. Some assumed that the portfolio with its reflective components seems to provide a tangible solution to bridge the gap between the theory and practice by encouraging students to engage in self-reflection and link the knowledge they have gained in the classroom to the knowledge and skills they have gained in clinical experience (Rafferty et al., 1996;Harris et al., 2001). (Tiwari and Tang, 2003) evaluated the effect of assessment portfolios on nursing students' learning, and the students reported that the process of developing their portfolio and reflecting on their learning encouraged them to adopt a deeper approach for their learning. This approach encouraged them to apply what they learned in theory in practice, which ultimately produced a better understanding of course content.

On the other hand, other studies did not support the assumption that portfolios are effective tools to link theory and practice. For example, in their study to investigate whether nursing students experienced any benefits from using portfolios, Dolan et al. (2004) found that over half of the students reported that the use of portfolio did not help them to link the theoretical part of the course to practice. The researchers attributed that to the fact that many students in their study did not realize the value of reflection-on-action in bridging the theory practice divide. Similarly, McMullan (2006) found that only 51% of the students in their study agreed that the process of developing portfolio helped them to link theory and practice, while 42% agreed that it helped them to learn from their practice. During interviews, some students reported that the focus of the portfolio was on the theoretical part of the course rather than on their practical skills.

Similar results were reported by Gallagher (2001), who conducted a study investigating the perception of nursing students of a paper-based portfolio in relation to its role in integrating theory and practice. The students in his study reported that use of portfolios did not strengthen the connection between the theoretical and practical part of the course. He attributed this result to the fact that the portfolio was structured and the students had limited autonomy and control in developing their portfolio. Despite all the attempts to use the e-portfolio to reduce the gap between what nursing students learn in theory and what they do in reality, the problem of the theory-practice gap still exists. In this regard, Scholes et al. (2004) suggest that for the portfolio to be an effective tool to bridge the theory-practice gap, nursing

students and their mentors need to work together to match the theoretical learning outcomes to the students' clinical experiences and then reconstruct them in a format that fits the portfolio requirement.

Portfolio for personal development

The portfolio is not only a product that provides evidence of students' achievements and accomplishments, rather it is a process that can stimulate the personal growth of the students over time. The literature review indicates that the process of developing portfolio might bring some educational benefits for undergraduate nursing students as described below:

Portfolios as vehicles for the development of reflective skills

Reflection is considered the 'heart and soul' of the portfolios. It distinguishes the portfolio from being a mere collection of materials or just writing a folder. Reflection is the tool that helps nursing students learn simply from, and make meaning of their experience, and link theory to practice (Gallagher, 2001). Moreover, the engagement in the reflective process of the portfolio helps students to develop self-awareness of their own strengths and limitations and identify areas that need development and improvement (Harris et al., 2001).

However, the literature indicates that many students found difficulty to engage in critical self-reflection when developing their portfolios. This difficulty could be explained by many factors. For example, the students' fear that their personal reflection will be seen by others; the lack of guidance on how to reflect on their experiences; and poor facilitation from clinical staff on the reflective process. In a survey of 253 nursing students, McMullan (2008) reported that participants

considered that the reflective component of the portfolio increased their self-awareness of their strengths and weaknesses. However, most of them found it difficult to be honest and critical in their reflection if their reflective writing was seen by their assessors. She asserts that students tend to be guarded to express their feelings and thoughts honestly, and just write what assessors want to see.

Similarly, many students in other studies had negative views about using portfolios for assessment for the same reason (Mitchell, 1994;Timmins and Dunne, 2009). A participant of Timmins and Dunne (2009) commented that:

> "a reflective piece contains my private and personal thoughts and feelings which I do not want to share with a stranger and I do not feel it is any way appropriate to mark or grade how a person feels or react to a certain situation".

Based on these findings, using portfolio for assessment and forcing the students to share their reflections with others may reduce the learning value of the portfolio in enhancing students' reflective skills, thereby reducing its effectiveness in linking theory to practice (McMullan, 2008).

Portfolios facilitate students' autonomy and independence

Some claim that portfolios may encourage students to become independent learners by through allowing them to take more responsibility for directing their learning and progress (McMullan et al., 2003;Harris et al., 2001). In support of this claim, the students in Tiwari and Tang (2003) reported that the process of developing a portfolio allowed students to feel they were in charge of their learning, as they were autonomously selecting the evidence to demonstrate

their learning and achievement. Conversely, Dolan et al. (2004) reported that only 23% of students felt that the process of preparing portfolios had helped them to make autonomous choices regarding how they learn. The discrepancy in the results of these studies could be attributed to the way in which the e-portfolio was implemented. In the study of Tiwari and Tang (2003) the portfolio was compulsory for all students, while in the study by Dolan et al. (2004) students were not required to use the portfolio in order to pass the course, therefore it was not seen as a priority but rather as an additional burden, thus the majority of students did not use it.

Portfolios as focus for discussion and feedback

The dialogue between students and their clinical and academic staff is crucial for their learning. It is assumed that portfolios can act as tools for stimulating such dialogue through the process of feedback. The process of developing portfolios require ongoing support and feedback from mentors and tutors to ensure that students are on the right track (Harris et al., 2001;McMullan, 2008). This assumption was confirmed by Mitchell (1994), who found that both students and tutors appreciated the communicative nature of the portfolio that improved their relationship. Conversely, McMullan (2008) found that the poor design of the e-portfolio and the time it took to prepare one contributed to students receiving inadequate or no feedback from their mentors. The students in her study reported having a big, bulky portfolio filled with too much paper work, which made them end up focusing on obtaining signatures from their mentors rather than reflecting on their learning and getting feedback about their clinical skills. She concluded that portfolios designed this

way do not enhance the relationship between students and their clinical staff, thus she recommended that portfolios should be designed in a way whereby they are user-friendly to both mentors and students in order to be used effectively in extremely busy and stressful clinical settings.

A different type of discussion and collaboration was found by Tiwari and Tang (2003), who reported that during the process of preparing portfolios the students, of their own volition, created learning groups and engaged in a spontaneous collaborative learning technique to help each other in the process of developing their portfolios. In this sense, it can be argued that the portfolio can stimulate the collaborative learning among students.

3.1.1.2. Limitations of paper-based portfolio

A number of limitations of the use paper based portfolios were noted in the literature.

Size

A paper-based portfolio has been criticized for its physical size. Several students found paper portfolios to be inappropriate for the nature of the clinical placement, as they are bulky and take a lot of storage space (McMullan, 2008). A typical portfolio can weigh 0.5-1.5 kg, rendering it burdensome to transport or share (Timmins and Dunne, 2009). This excessive paper work may cause students to be distracted from their clinical work and lose communication with their mentors (McMullan, 2008;Williams et al., 2009).

Time consuming

Another limitation of paper-based portfolios is the time needed to complete them. Many students found paper

portfolios to be time-consuming and very stressful to compile, causing anxiety. This may have negative impacts on students' motivation to actively engage in their learning (McMullan, 2006;Mitchell, 1994).

Confidentiality and privacy:

There was concern related to how the privacy and confidentiality of the portfolio content can be maintained (Gannon et al., 2001). This concern emanated from the potential risk that unwanted or unauthorized audience to have access to the content portfolios if they are lost or left unsecure (Joyce, 2005).

Disjointed learning

The fact that the students may have a separate portfolio for each semester may result in learning becoming disjointed and disconnected if students perceive their learning in each semester to be separate and unconnected (Sher et al., 2002).

3.1.2 E-portfolios

3.1.2.1 The pedagogical value of e-portfolios

Although both paper portfolios and e-portfolios overlap in most pedagogical values, the latter have some added pedagogical benefits. According to Challis (2005), the pedagogies and processes involved in the process of developing e-portfolios are very different from those involved in paper-based portfolios in terms of the ease of use and manipulation of the digital artifacts and evidences, the ability to rework and revisit the materials and content over time, and most importantly the high possibility of interactions and the communication between the author of an e-portfolio and the potential readers.

Similarly, Pincombe et al. (2010) postulated that the e-portfolio could offer a great potential to enhance students' learning by helping them to actively construct their own knowledge and make sense of their experience through the interaction with their teaching staff and peers. She also assumed that the e-portfolio could transform students' learning through providing them a more personalized learning space which can be accessible from their clinical placement.

In this sense, it would facilitate the process of receiving more personalized and immediate feedback from their mentors and tutors while they are in the clinical setting. It would also encourage interaction with their colleagues and thus foster collaborative learning (Pincombe et al., 2010). However, more research is still needed to investigate the learning potentials and pedagogical value of the e-portfolio (Timmins and Dunne, 2009). The following are themes developed from the literature review on the pedagogical value of e-portfolio for undergraduate healthcare students:

E-portfolios as tools for enhancing reflective skills

The process of reflection can help students to engage in a deeper learning of the content and develop a wide variety of skills such as self-assessment and critical thinking skills. Some of the tools that are embedded within e-portfolios, such as blogs and wikis, may support students in developing reflective and self-assessment skills (JISC, 2008b). The accessibility and ease of storage nature of the e-portfolio could:

> "open wide the possibilities for reflections of all types: in action, before action, after action, in solitude, in consultation with peers, in consultation

> with instructors, coaches, and advisers, written, spoken, videotaped, or graphically represented". (Riedinger, 2006, 96)

However, in real contexts, it seems that the power of such possibilities to enhance students' reflective skills is yet to be fully realized by nursing students and their instructors. In a study conducted in Canada by Garrett and Jackson (2006), ten final-year nursing and medical students were provided a handheld device connected to their e-portfolio in their clinical placement. The purpose of this device was to enable them to access resources and materials remotely and record their experiences and reflection immediately whilst on placement. In this small study, the researcher found that although some students liked the notion that they were able to write their reflection on their experiences while they were engaging in the clinical practicum, they felt that writing reflection "on the job" was not practical or feasible as they were "too busy". Moreover, writing reflection on action was not perceived by the students as a priority in their overall daily learning activities. Most of the students in this study preferred to write their reflective entries on any PC away from the clinical setting. Therefore, writing reflection-in-action may not be possible in clinical settings.

Conversely, Murray et al. (2006) conducted an online survey on ten nursing and medical students to address the effect of using e-portfolios over the paper-based portfolios on supporting their learning. They found that when students were asked to rate how good they were on reflection, two students who used e-portfolios rated themselves as excellent reflectors compared to zero in students who used paper portfolios. The students who used e-portfolios reported that

the ability to access all their entries and competencies in one place helped them to record their achievement and track their progress on their clinical placements. The researchers argued that the students' awareness of their progress and achievements is essential pre-requisite to enable successful reflection to take place. However, the results from this study should be interpreted with caution because of the very small sample size (n=10). Therefore, the researcher recommended a further study to explore how students view an e-portfolio as a reflective learning tool and investigate whether the use of e-portfolios encourages the development of reflective skills even without students realizing it.

Similarly, in a study conducted among third-year medical students who used a web-based portfolio during their four-week rotation in geriatric medicine, Duque et al. (2006) found that the use of web-based portfolios enhanced students' reflective ability, as indicated by increasing the number of reflective evaluations posted by the students during their clinical rotation. The researchers believed that every evaluative post represented an active exercise of self-reflection by the students. They suggested that the electronic format of the portfolio helped the students to write and post comments and action plans related to their current and future learning more often while they were in the clinical settings.

E-portfolios as vehicles for feedback

Feedback for healthcare learners is a complex and multidimensional process that is essential for their learning, progression, and preparation for their professional role. Feedback is particularly valuable to healthcare students because lack or inadequate feedback may have direct impacts on patient safety and may have life-threatening

consequences. Therefore, receiving timely constructive feedback is considered to be very important for promoting successful learning in healthcare education (Peacock et al., 2011). Theoretically speaking, one of the most notable advantages of an e-portfolios over their paper counterparts is their communicative and interactive nature, which may enable students to give and receive feedback at remote locations and at any time. Hence, feedback can be obtained immediately from different individuals such as mentors, tutors, and peers (Murray et al., 2006). It is also possible, through the use of the inbuilt tools embedded in e-portfolios, for students to save and store the received feedback to be used later in their reflection (Moores and Parks, 2010).

In a collective case study in healthcare education involving 31 students from three different programs, namely nursing, physiotherapy and diagnostic radiography, Peacock et al. (2011) found that the students were generally positive toward the role of an e-portfolio as a tool for receiving feedback from their tutors. Many benefits were reported by several students regarding the use of the e-portfolio as a feedback tool, such as the constant availability of feedback, the ease of access to the feedback at any time and from anywhere, the personalization of the feedback and digital notification when the feedback was available. However, a few students found the wide-range options and features of receiving feedback within the e-portfolio system as time-consuming, tedious and difficult to access. This variability in the students' attitudes might be due to their differing levels of technological skills on how to use the e-portfolio system or their preference to have face-to-face feedback.

Garrett and Jackson (2006) concluded that having access to e-portfolios whilst on placement may increase students' opportunities to immediately add and receive comments from others on their work and thus modify their practice accordingly. Moreover, students can demonstrate their achievement of particular competencies and get feedback from their mentors, tutors or peers immediately while on placement.

Duque et al. (2006) used a WebCT based electronic portfolio with their third-year medical students during a one-month rotation in geriatric medicine. They found that the web-based nature of the e-portfolio allowed for tracking and monitoring the development of knowledge, skills and attitudes of each student over time. Therefore, the feedback given to each student became more focused and personalized. This way, the e-portfolio was transformed from a static record to a dynamic learning tool that included a dynamic cycle of evaluative feedback from the students and tutors. However, based on their observation of students' web-based portfolios, they found that sometimes the tutors' postings did not necessarily follow or synchronize the students self-reflection due to the tutors' lack of time to give immediate feedback. Thus, the problem was not in the e-portfolio system, rather it was related to the tutors' commitment to provide timely feedback.

Vernazza et al. (2011) ascribed problems to the system, not to teaching staff. They reported that the teaching staff felt that the e-portfolio system itself was not conducive to provide good and timely feedback related to some technical and practical problems, such as limited access to wireless internet connection and security issues. These problems might have

limited the efficacy of the electronic portfolio to act as an effective tool for immediate feedback.

E-portfolios as tool for sharing and collaboration

Collaborative learning has the ability to change how nursing students and their teaching staff (both academic and clinical) view learning, and how it can be applied in practice. It can be considered as a significant aspect of successful nursing students' learning experience. However, collaborative learning cannot be successful without good communication and interaction among students, and between the students and their academic staff and clinical staff (Souers et al., 2007). One of the major benefits of an e-portfolios is that it can potentially foster and promote collaborative learning through its communication capabilities and features. These features can encourage students to interact and share their work and experiences with their peers, mentors, tutors or employers (Ng et al., 2007;JISC, 2008b).

Garrett and Jackson (2006) reported that the multifunctional features and the communication platform within the e-portfolio system provided the nursing students with useful tools and resources to support them during their placement. These communication tools prevented the students from feeling isolated and kept them connected with their teaching staff. The ability to access their electronic portfolio in the placement allowed them to selectively share their reflection and stories of how they were achieving the required clinical competencies with their teaching staff. Given these benefits, the researchers recommended a further study to further explore how the communication capabilities of the e-portfolio that allows sharing information and collaborating with others contributes to their clinical education.

Moreover, Murray and Muir (2011) conducted semi-structured interviews to examine tutors' practices when using e-portfolios with their first year medical students. The tutors reported that they found the e-portfolio to be a useful tool for communication with students. They also reported that the confidential and safe nature of the e-portfolio learning space encouraged the students to selectively share and discuss some personal issues with them. As a result, the tutors became more aware of the issues that might influence the learning and progress of each student individually, thus providing more personalized learning. Moreover, the tutors found that when the students shared their entries with them, this allowed them to gain full picture of the students' experience in its entirety.

From what the students were sharing, the tutors were able to see what was being taught in the other parts of the course and make connections between their parts and the other parts. They were also able to see the students' non-academic activities and their informal learning outside the university. The findings of this study have opened up other areas of research regarding the implications of sharing of information, collaboration and relationship with teaching and clinical staff, quality of feedback and confidentiality issues on students' learning. Therefore, they recommended a further investigation of these issues through exploring students' views regarding the implications of these issues on their learning.

E-portfolios link theory to practice

Two studies were found regarding the role of the technology within e-portfolios in linking theory to practice in nursing education. The first study was a small study conducted by

Bogossian et al. (2009) in which three nursing students were issued with tablet PCs to access their e-portfolio in their clinical placement. In the focus group conducted by the researchers, only one participant reported that the ability to complete the e-portfolio entries and receive a timely feedback at bedside enhanced the accuracy of their entries and helped in integrating the theory to practice. The other two participants confirmed the accuracy of the entries, but did not confirm the integration of theory and practice. The researchers related this division of the students' perceptions to the fact that these two participants did not recognize the benefits of accessing their e-portfolio at the bedside because they chose to complete their entries at home.

Similarly, Garrett and Jackson (2006) reported that the aim of their research was to demonstrate the potential of e-portfolio as a pedagogical tool to integrate the clinical knowledge into the workplace through facilitating the process of recording reflection immediately while the students were in the clinical setting. They found that this aim was not achievable with the current workload in the clinical setting and the amount of time required to record reflection. Interestingly, they suggested that the attitude of clinical staff may influence the students' accessibility of their e-portfolio to link theory to practice. For instance, in a study of the barriers to electronic portfolio access, Bogossian and Kellett (2010) found that 12% of the students reported a negative attitude from the Registered Nurses (RN) when students were working on their clinical e-portfolio in the placement. The hospital ward was not seen as an appropriate place to work on the e-portfolio. If the students were seen using PCs to access their e-portfolio, they were quickly assigned a job or task to do by

the RNs. One of the students reported that one RN said "…if you have time to sit at the computer then you must need something to do".

The findings of these studies show how the context in which learning is situated play an important role on the efficacy of e-portfolio as a tool for integrating theory to practice. More specifically, they suggest an additional theory-practice barrier faced by nursing students and new graduates in attempting to utilize advanced technologies for reflection and other purposes in working environments where traditional attitudes comprise a barrier to such practices, such as experienced nursing staff unfamiliar with such technologies and aspects of modern nursing viewing it as a wasteful extravagance undertaken at the expense of hands-on care in clinical settings.

3.1.2.2 Issues and concerns related to the use of e-portfolio

While moving from paper-based portfolios to e-portfolios obviously offers some advantages, it is not without its own limitations and problems. The following are the main issues and concerns found when reviewing the literature on the use of e-portfolios as learning tools in nursing education and other health care disciplines.

Time

A concern was raised by several students regarding the issue of time to complete their e-portfolio (Pincombe et al., 2010). The students found the process of uploading documents and entering data into e-portfolios is time consuming. One of the students said it "took a lot of time trying to upload 105 experiences" and another student said it is a "demanding course already, I didn't have time to learn it alone".

Researchers argue that any form of portfolios requires considerable amount of time and training, particularly in the beginning, until students become confident and skillful in using such tools. Time was also a big barrier for students to complete and work in their e-portfolio in clinical setting. The time in the clinical setting is influenced by many contextual factors, such as: the heavy clinical workload and ward "business"; the tendency of the students to prioritize other nursing activities over completing their e-portfolio; and the difficulty to find PCs to access their e-portfolios in the clinical placement (Bogossian and Kellett, 2010).

E-portfolios are often more time-consuming than paper portfolios, partly due to their extra functionalities and applications. In medicine, Driessen et al. (2007) found that a web-based portfolio scored significantly higher than the paper-based portfolios for the "additional effort" exerted by students. This means that the students spent extra time and effort on the web-based portfolio than on the paper-based legacy system. The researchers argued that this finding could not be attributed to the technological difficulty of the web-based portfolio, rather the extra time and effort required was due to the electronic format of portfolios motivating and encouraging the students to spend more time working on their portfolios.

Conversely, Murray et al. (2006) found that the students who used e-portfolios spent less time developing them and writing their reflection than those who used paper-based portfolios. This was surprising, therefore the researchers recommended a further a study to explore whether this reduced time spent on the writing the reflection and preparing the e-portfolio resulted from the ease of use and the ability to access the

work in one place, or because the students using e-portfolio actually have higher reflective abilities than students using paper-based portfolio.

Ownership

The processes, outcome and contents of the e-portfolio need to be owned and controlled by the student (Barrett and Carney, 2005). There is a need to maintain a balance between protecting students' rights regarding data protection, accessibility and security in their e-portfolios and recognizing that some of the e-portfolio contents need to be accessed occasionally by others, such as teaching staff for assessment purposes (Moores and Parks, 2010).

Murray et al. (2006) found that the majority of students who used paper-based portfolio demonstrated increased feelings of ownership over their portfolios' contents compared to those who used e-portfolios. Although those who used e-portfolios had the option of keeping their reflective entries private, they were required to share these entries with their tutors and mentors to discuss their learning and achievements. One clinical supervisor in the same study stated that the reflective entries should not be private, because reading the students' reflection enabled staff to understand how students think and learn. This lack of control and ownership over the e-portfolio contents could hinder or restrict the type of information and reflective entries students enter in them, therefore the researchers suggested further examination of this issue and possible ways to overcome it.

Conversely, Driessen et al. (2007) found in their comparative study that the electronic presentation of e-portfolios motivated first-year medical students to spend extra time

working on their web-based portfolios, with a consequently enhanced their sense of ownership compared to paper-based portfolios.

Validating the competencies

The electronic presentation of the e-portfolio raised concern about how the students have their competences signed off by their clinical staff in the clinical placement. In their action research in midwifery, Pincombe et al. (2010) found that a number of students were concerned about validation of their experiences and competencies when using e-portfolios, and they were worried about how they could collect signatures from their mentors and tutors as evidence of achieving competencies in their e-portfolios. The students wanted to ensure that easy and effective ways of gaining validation of their experiences would be available so that the e-portfolio would provide a proof of their competencies and meet registration requirements.

Bogossian et al. (2009) reported that using the tablet PC to access e-portfolios during clinical placement made it easier for students to meet with their preceptors and have their competencies signed off. Unfortunately, not all nursing schools can afford a tablet PC for each student to enable allowing them to access their e-portfolio in the clinical setting, therefore tablet PCs cannot be considered as a practical solution to the problem of validating students' experiences.

3.2 Discussion and justification for further research

Based on the findings of this critical review in nursing education and related healthcare disciplines, it can be seen that the electronic nature of the e-portfolio offers students a dynamic, innovative and personalized medium for capturing, recording, and organizing their learning evidences. Moreover, e-portfolios could have the potential to enable students to demonstrate their competencies and progress; reflect immediately on their experiences while they are on the clinical placement; invite and provide commentary and assessment; link theoretical knowledge with the practical experience; and selectively share and publish their reflections and stories on how they are achieving the particular learning outcomes. However, few studies have been conducted in health care professions in general and in nursing in particular to further explore these potentials and their implications on nursing students' learning. Timmins and Dunne (2009) stated that the use of e-portfolios in nursing education is still in its infancy.

Some inconsistencies (positive and negative views) were found in the studies discussed in the previous sections with regard to how students perceived the pedagogical value of e-portfolios and how they changed the way they learn. It could be argued that the inconsistencies in students' perceptions of the pedagogical value of e-portfolios were very much dependent on the way e-portfolios were used and adopted by schools and the context in which they were situated. Therefore, the sociocultural context in which the e-portfolio is embedded and encapsulated is very important for its pedagogical value to be effectively and successfully utilized.

The context may include implicit and explicit rules and regulations at both the micro and macro level in the program and the practice settings; the communities of practice in which the students are members, for example tutors, mentors, and curriculum administrators; and the division of labour among these communities of practice, in terms of hierarchical and horizontal relationships between members.

Moreover, the majority of studies focused on students' perspectives and neglected the influence of the surrounding context on the effectiveness of the e-portfolio as a learning tool and the influence of this context on how the students perceived its value. Therefore, to understand the pedagogical value of the e-portfolio for nursing students, the sociocultural context in which the students and the e-portfolio are situated must be examined.

The findings also revealed that the use of e-portfolios could have the potential to facilitate and improve students' reflective skills, but most studies relied on a quantitative methods to measure students' reflective abilities. In one of the studies, the students' reflective ability was measured by the number of reflective evaluations posted during clinical rotation. In another study, the students were asked to rate themselves on a scale to measure their reflective abilities. Hence, the potential power e-portfolios features and functions to change and enhance the nature, form and quality of students' reflection is still not fully realized and remains under-researched. Therefore, further study may be required to explore how the e-portfolio changes or enhances the nature and quality of students' self-reflection by qualitative methods.

Moreover, the findings showed that there was a variability in the students' views regarding the benefits of the electronic presentation of e-portfolios to enhance the timing and quality of feedback. The literature is still unclear on the effect of the electronic presentation of the e-portfolio on the quality and depth of feedback provided to students, how it helped students to utilize such feedback in a way to support their learning in the course, link theory to practice, and plan for their development. Therefore, qualitative research is required to address these issues.

The findings also suggest that the e-portfolio has great potential for enhancing communication and collaboration between the students and their tutors. However, the evidence available to explain how the e-portfolio enhanced this interaction is limited. Only one study by Murray and Muir (2011) provided a qualitative explanation of how the e-portfolio influenced the relationship between the students and their tutors only from the tutor perspectives. Therefore, the researchers recommended a further investigation on the effect of e-portfolios on the interaction between the students and their tutors from students' perspectives and its implications on their learning. The existing literature also neglected the influence of e-portfolios on the interactions among students and the implications of these interactions on their learning. Therefore, a qualitative study is required to explore how the e-portfolio influences all these types of interactions from all perspectives.

It is also evident from the literature that there are some inconsistencies in students' attitudes regarding the effectiveness of e-portfolios on reducing the gap between theory and practice. These inconsistencies could be attributed

to the fact that their clinical placements were in different contexts with different circumstances and factors that might have influenced the use of e-portfolio. For example, the busy nature of the clinical placement, heavy workload, time limitations and hardware availability. These contextual factors may limit the students' accessibility to their e-portfolio to record their reflections and receive feedback from their tutors to help them link theoretical knowledge to clinical practice. It can therefore be concluded that the contradictions and tensions in the context in which the e-portfolio is situated must be examined. Moreover, the implications of such contradictions on students' learning and how students overcome them need to be explored.

The majority of studies on e-portfolio were conducted from students' perspectives, with only a few considering the perspectives of both students and tutors. The main research method in the majority of these studies was quantitative survey method using questionnaire, with a few utilizing a questionnaire combined with either a structured interview or focus group. Survey research methods have limitations such as low response rate, as reported by the majority of studies. Therefore, the results of these studies should be interpreted with caution. Moreover, standardized questions in questionnaires or structured interview makes it difficult to capture the uniqueness of each student's experience and achieve an in-depth understanding of student perceptions of the pedagogical value of e-portfolio. Furthermore, the survey method does not enable researchers to capture and understand the "context" that may shape the students' experience of using e-portfolios. Therefore, a qualitative

research to obtain in-depth understanding of the phenomenon and its context would reveal useful results.

In their systematic review, Buckley et al. (2009) suggested that qualitative research is required to investigate the pedagogical value of e-portfolios and how their technological presentation could change the nature of student learning. Hence, the aim of the current study was to provide a detailed and comprehensive understanding of the pedagogical value of e-portfolios for nursing students and the challenges that affected their role as a learning tools. Chapter three describes the theoretical framework that was used in this study to understand and analyze the context in which the students and the e-portfolio were situated.

3.3 Research aims and objectives

Aim 1: Explore the pedagogical value of the e-portfolio as a learning tool for nursing students:

Related Objectives:

- Identify the learning activities that undertaken by the students with the support of the e-portfolio as a mediating tool.

- Explore the mediational role and value of the e-portfolio in helping the students to carry out each of these learning activities and receive support from their tutors and facilitators.

Aim 2: Investigate the contextual challenges that affect the role of the e-portfolio in mediating the students' learning activities and identify the underlying contradictions that generated these challenges.

Related Objectives:

- Understand how the sociocultural context constrained the students' use of the e-portfolio.
- Identify the challenges the students experience while carrying out their learning activities using the e-portfolio.
- Trace the root causes of these challenges through the exploration of the contradictions that generated them.
- Identify the implication of these challenges and contradictions on the use of e-portfolio to mediate these learning activities.
- Identify how the students and their tutors are able to resolve these contradictions.

3.4 Summary

This chapter presented the literature review pertaining the pedagogical value of e-portfolios for nursing students. The chapter started with an overview of the methodology of literature review, followed by discussion of the key findings found in the literature. The chapter ended with a discussion of these findings and justification for this research followed by the research aims and objectives. The next chapter will present the theoretical framework underpinning this research.

CHAPTER FOUR THEORETICAL FRAMEWORK

4.1 Introduction

This chapter presents the basic tenets of Activity Theory as the theoretical framework underpins this study. The chapter starts with a historical overview of Activity Theory. The following section will explain Vygotsky's sociocultural theory. Then, the third section will be dedicated to the generations, principles and components of Activity Theory.

4.2 The sociocultural approach to learning

In recent decades, the definition of learning has dramatically changed from a static and permanent modification of behaviour to a lifelong process of professional and personal development. Learning is a complex process which is not limited to the stimulus response connections as conceived by behavioural psychologists, or information processing in individual minds, as conceived by the cognitive psychologist; many of these traditional assumptions have been challenged by the sociocultural approach to learning (Jonassen 2000).

The sociocultural approach to learning was primarily based on the constructivist learning theory that views learning as an active process which happens within an individual. Then, this sociocultural approach extended to incorporate the context in the learning process (Hall 2007). Simply put, the constructivist approach emphasizes the personal effort in constructing knowledge, while the sociocultural approach accords more attention to the meaningful construction of knowledge due to interactions with others in context (Hall 2007). What individuals learn and how they make sense of the knowledge depends on where, when, and in what social

context their learning take place (Yang and Wilson 2006). According to (Wertsch 1991a), "the basic tenet of the sociocultural approach to mind is that human mental functioning is inherently situated in social interactional, cultural, institutional, and historical contexts" (p.86). Therefore, in order to understand human learning and thinking processes, the context and setting in which such learning is situated must be examined (Bonk and Kim 1998). The e-portfolio as a cultural learning tool is embedded and situated in and influenced by the sociocultural community in which students are actively engaged and interacting with others, such as their mentors, tutors and peers. As such, students' learning can no longer be seen as an isolated individual activity rather it is a social activity resulting from both the social interactions with others and the use of tools (such as e-portfolios), and can be best understood within the cultural context in which it is situated.

The sociocultural theory of Vygotsky views learning as an activity that takes place in a social and cultural context, mediated by cultural tools. Human beings generate and use cultural tools (intellectual and physical) all the time to mediate between their minds and the abstract world in order to understand and learn about the world around them and construct new meanings (Kozulin 1998). Within Vygotsky's sociocultural perspective on learning, e-portfolios can be seen as mediating tools used by students to learn and find new meanings in their experience.

The fact that the context in which students learn and act must be examined and included as the basic unit of analysis makes the research purpose collective, even if the researcher

is interested only in examine students actions (Kuutti 1996). In this sense, Vygotsky' sociocultural theory has expanded and developed into a framework known as Activity Theory, according to which researchers must study not only the nature and types of activities in which people engage but also who is engaging (i.e. their background, motives and goals), what products or objects result from the that activity, the rules, regulations, norms that might limit that activity, and the community in which this activity occurs (Jonassen and Rohrer-Murphy 1999).

Therefore, Activity Theory is considered as a powerful sociocultural analytical and conceptual framework, called Activity System, that enables a more comprehensive understanding of the fundamental aspects of the social context in which learning is situated. This notion is supported by (Jonassen 2002), who suggests that "activity theory provides an alternative lens for analyzing learning processes and outcomes that capture the complexity and integratedness with the context and community that surround and support it" (p.5). Moreover, (Barab et al. 2004) asserted that "activity theory might provide an ideal position – one with sufficient scope and depth –for observing individuals at work, alone or in collaboration with others, using electronic tools" (p.205). Therefore, Vygotsky' sociocultural theory as a learning theory with Activity Theory as analytical and conceptual framework were appropriate for this research (figure 4.1). In the following sections of this chapter, the background of the two theories is presented in details.

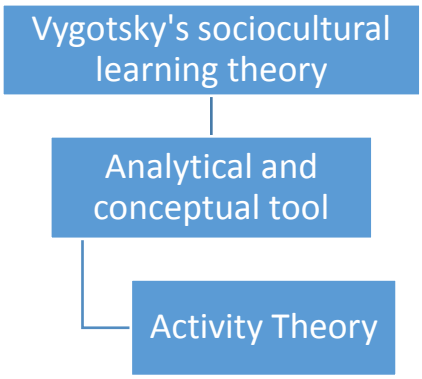


Figure 4.1: The theoretical framework of the current study

4.3 Vygotsky's sociocultural learning theory

Vygotsky's sociocultural approach to learning and development was developed in the Soviet Union in the 1920s and 1930s based on the Marxist critique of cultural contexts mediated by cultural tools in historical and economic development. Vygotsky argued that individuals are members of communities in which the interpersonal (social) interaction and the use of tools is a foundation of learning (Hegerholm 2011).

Vygotsky rejected the claim of the two predominant schools of psychology that focused on external (behaviorist approach) and internal (cognitivist approach) experiences as the basis of human development, postulating that human learning is not only an individual process, rather it develops within and is conditioned by a social matrix. His approach stresses an account of the interdependence of individual and social processes (John-Steiner and Mahn 1996). Therefore, understanding human cognition and learning requires that the individual and the environment have to be treated as inseparable entities (Barab et al. 2004). This interdependence between the individual and the social environment can be

best understood by considering Vygotsky's basic assumptions; the first assumption is that "human action, on both the social and individual level, is mediated by tools and signs" while the second assumption is that "individual learning including higher mental functioning has its origins in social interactions" (Wertsch 1991b). In the light of these assumptions, three concepts have emerged in Vygotsky's sociocultural theory: mediation, internalization and the zone of proximal development.

4.3.1 Mediation

The central notion of Vygotsky's sociocultural theory of is that all human activities take place in cultural contexts mediated by tools and symbols (John-Steiner and Mahn 1996, Barab et al. 2004). Vygotsky rejected the notion rooted in the behaviorist approach that proposed a direct connection between the object (stimulus) and subject (respondent), arguing that all human activities are mediated by a third element that he labelled as a tool or instrument that mediates the interaction between the "object" and the "active subject" (Barab, et al. 2004). According to Vygotsky (1978):

> The use of artificial means [tool and symbolic artifact], the transition to mediated activity, fundamentally changes all psychological operations just as the use of tools limitlessly broadens the range of activities within which the new psychological functions may operate. In this context, we can use the term higher psychological function, or higher [truly human] behavior as referring to the combination of tool and sign in psychological activity. (Vygotsky, 1978, p.55)

Vygotsky introduced the concept of mediated activity (learning) to explain the processes that enabled the development of human consciousness through the interaction between the individuals, tools and other individuals in an environment that results in individuals constructing new meanings in their world (Vygotsky 1978). Therefore, individuals are no longer seen as passive participants waiting for their environment to instigate a meaning making process for them, rather they are active participants, and through their interaction, they make meaning of the world while they create and modify activities that trigger transformations of tools, artifacts and others in their environment (Scribner 1990).

Vygotsky (1978) identified two major types of mediators or tools: material and psychological. ***The material tools*** could be anything people have invented to master nature (Vygotsky 1978), such as hammers, pencils, wooden sticks (Barab et al. 2004) and laptops (Kozulin 1998). Kozulin (1998) claims that "material tools have only indirect influence on human psychological processes because they are directed toward the physical world and nature". Cole and Engeström (1993) used money as an example of an invention used as a material tool to mediate the human transaction of goods and illustrate how money has shaped the way of thinking of modern societies.

While material tools are directed externally toward the physical world, ***psychological tools*** are directed internally toward mediating the human psychological processes. This kind of tools are constructed and transformed by human beings to mediate between their own minds and the abstract world (Kozulin 1998). Examples of these symbolic tools are language, music, art, numbers, and systems of arithmetic

(Lantolf 2000). These psychological tools are not constructed and invented by the individual in isolation; they are created, embedded and enculturated within the sociocultural community in which the individual is actively engaged (John-Steiner and Mahn 1996). From the cultural historical perspective, these tools and the knowledge related to their continued use are transferred from generation to generation. As such, learning is not solely an individual activity, rather it is a collectively shared process with significant cultural and historical dimensions (Stetsenko 1999).

4.3.2 Internalization

Vygotsky introduced the concept of internalization to describe how human beings processed what they learned through mediated action to develop higher mental functions through social interactions with others (Awang 2008). According to (Vygotsky 1978):

> Every higher mental function was external because it was social before it became an internal, strictly mental function: it was formerly a social relation of two people… We can formulate the general genetic law of cultural development as follows: Any function in the child's cultural development appears on the stage twice, or on two planes, first on the social level, and later on the individual level; first between people as an intermental category, then inside the child as an intramental category. (Vygotsky 1978)

According to Barab et al. (2004), "the intermental plane is a place where shared cognition emerges through the interaction among and between the individuals and the intramental plane is a place where this shared cognition is

internalized or appropriated". In other words, the learner takes new information and skills experienced in a social context and develops the necessary understanding to apply or "appropriate" these skills for one's independent use based on their characteristics, experiences and existent knowledge (Rogoff 1990). From the sociocultural perspective, human learning and development is seen as a "gradual internalization of processes that are initially shared between participants of the learning activity then later appear as independent problem solving skills" (Chang-Wells and Wells 1993).

4.3.3 Zone of proximal development ZPD

Vygotsky presented the metaphor of the zone of proximal development (ZPD) to eliminate the unidirectional relationship that he created between the individual and the environment in the process of internalization. The ZPD is where the interpersonal (intermental) and intrapersonal (intramental) activities blend and are incorporated together, no longer existing as separate entities. Vygotsky used the ZPD as a metaphor to move away from the idea that individual consciousness is a product that developed in isolation within the individual, emphasizing that individual consciousness is a shared process between individuals and their environments (Yamagata-Lynch 2010). The zone of proximal development can be defined as the "distance between what an individual can achieve on her/his own (the actual level of cognitive development) and what he or she can accomplish when guided by more capable peers or adults (the potential level of development)" (Barab et al. 2004). The central notion of the ZPD is that human beings learn through social interactions with others, which takes place in a cultural

historical context, mediated by cultural tools (Barab et al. 2004).

Pedagogically, although learners in the ZPD are active participants, it is still the responsibility of the more advanced facilitator (e.g. teacher or peers) in the same cultural context to help the learner in the meaning making process. In this sense, learning can be understood as a collaborative action between individuals and objects of environment mediated by tools and other social phenomena (Barab et al. 2004).

4.3.4 Shortcomings of Vygotsky's sociocultural theory

Vygotsky' sociocultural theory was criticized by for two shortcomings. First, the definition of activity was never fully articulated by Vygotsky, although it was elaborated by his protégé Leontiev (Barab et al. 2004). The second criticism was that although the theory emphasized the notion of mediated action by tools and social others, this notion was still anchored in the level of individuals' actions and did not go far enough to elaborate on how cognitive change happens within a collective context. Therefore, the basic unit of analysis was the individual, not the activity (Barab et al. 2004, Hardman 2005). However, for activity theorists, Vygotsky's work is considered the first generation of Activity Theory and it provides the conceptual basis for later versions (Engeström 1987).

4.4 Activity Theory

Activity Theory originated within Soviet (materialist) psychology which espoused "the principle of unity and inseparability of consciousness (i.e., human mind) and activity", drawing on the Marxist tenet of economic determinism as the underlying dynamic of human society and

progress. This principle means that the human mind develops, exists and can only be understood within the context of goal-oriented, meaningful and socially determined interactions between the individuals and their material environment (Kaptelinin, Kuutti et al. 1995). In other words, a human activity cannot exist as an isolated entity. This idea was further elaborated by Rubinshteĭn (1964), who developed the notion of human action as the unit of analysis, and led by Vygotsky, the founder of the cultural history school of psychology. As mentioned previously, Leontiev subsequently developed the conceptual framework of Activity Theory (Kaptelinin, Kuutti et al. 1995). Activity Theory has evolved through three generations of research, as described in the following sections (Engeström 2001).

4.4.1 Activity as the basic unit of analysis

The basic unit of analysis in many psychological theories is human action. Analysing human action is relatively easy in laboratory experiments, but analysing these isolated actions in real-life situations outside the laboratory is useless for practical purposes without some comprehension of the surrounding context of meaning in which the actions take place. In Activity Theory, the context in which the human actions are occurred must be included in the basic unit of analysis. This unit is called an activity. The fact that the context must be included in the unit of analysis makes the research purpose essentially collective even if the researcher is interested in individual actions. Moreover, individuals can and usually do participate in more than one activity simultaneously (Kuutti 1996).

According to Jonassen and Rohrer-Murphy (1999), human activity cannot be understood or analysed outside its context.

Therefore, when analysing human activity, researchers must study not only the nature and types of activities that people engage in but also who is engaging in that activity, their backgrounds, motives and goals, what products or objects result from that activity, what are the rules, regulations and norms that might limit that activity, and also study the community in which this activity occurs. In this sense, Activity Theory can be considered as a powerful sociocultural and cultural historical lens by which researchers can understand and analyse the interaction of consciousness (human mind) and human activity within its relative environmental context. In other words, learning and performance need to be understood and analysed within the context in which they occur (Jonassen and Rohrer-Murphy 1999).

4.4.2 The first generation of Activity Theory: from Vygotsky to Leontiev

The first generation of activity theory was based on Vygotsky idea of mediation. This concerns the mediation of actions by cultural tools, commonly represented as the triangle of subject, object and mediating artefacts (figure 4.2). The introduction of the idea of culturally mediating artefacts in human action was revolutionary, and meant that individuals could no longer be understood without their cultural means (Engeström 2001). This generation focused primarily on the level of individual actions, and it did not demonstrates how individual action is situated within the collective context. Therefore, the basic unit of analysis remained individually focused.

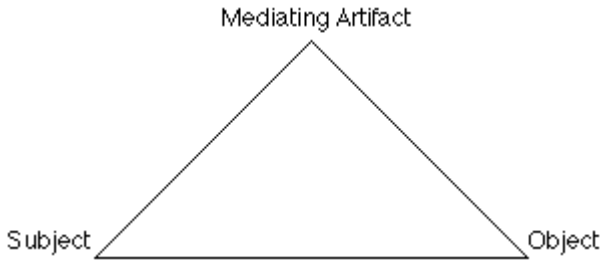


Figure 4.2: The first generation of activity theory
(Engeström 2001)

The difference between individual action and collective activity was implicitly involved but not well articulated by Vygotsky's theory. Leontiev (1981) explicated the difference between the individual action and collective activity by his well-known example of the "primeval collective hunt" (Hardman 2005). Leontiev developed a three-level model of activity which differentiates between action, operation and activity but he never graphically expanded Vygotsky's original model into a new model to illustrate the collective activity system (Engeström 1987). In Leontiev's model (figure 4.3), "the upper level of the collective activity is driven by an object-related motive, the middle level of individual or group action is driven by a goal, and the lowest level of automatic operations is driven by the conditions and tools of action at hand" (Engeström, Miettinen et al. 1999).

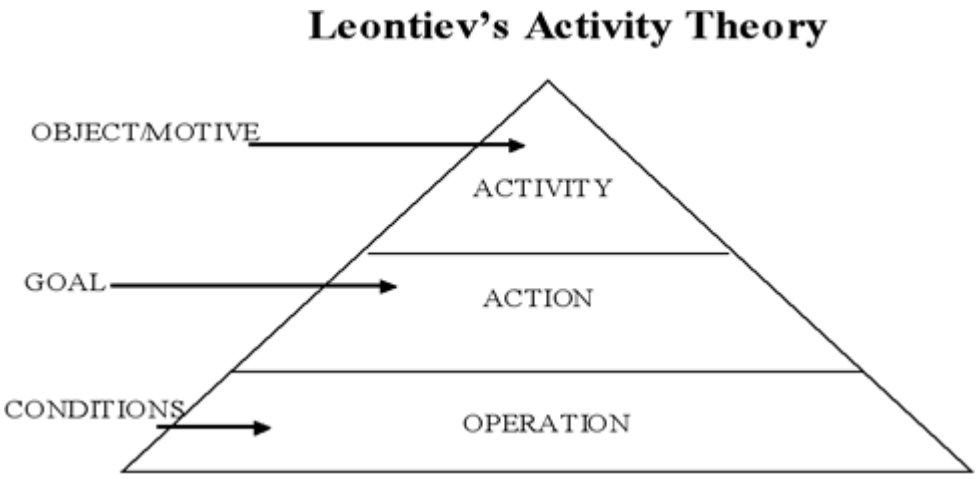


Figure 4.3: Leontiev's model of activity (1981)

4.4.3 The second generation of activity theory: from Leontiev to Engestrom

The second generation of activity theory was proposed by Engestrom (figure 4.4). Based on Leontiev's work, Engestrom expanded and developed the original triangle of the activity to enable examination of the activity system at the macro level of the community to the micro level that focuses on the individual using mediating tools. The purpose of this expansion is to represent the collective/social elements of the activity system by adding elements of rules, community, and division of labour while highlighting the importance of analysing their interactions with each other. Also, the object element in the second generation is depicted by an oval to indicate that object-oriented actions are always implicitly or explicitly characterized by ambiguity, sense making, surprise and potential for change (Engeström 2001). Moreover, (Engeström 1987) emphasized the idea of contradictions in the activity system as the driving force of change and development. The basic unit of analysis in this generation is the activity system.

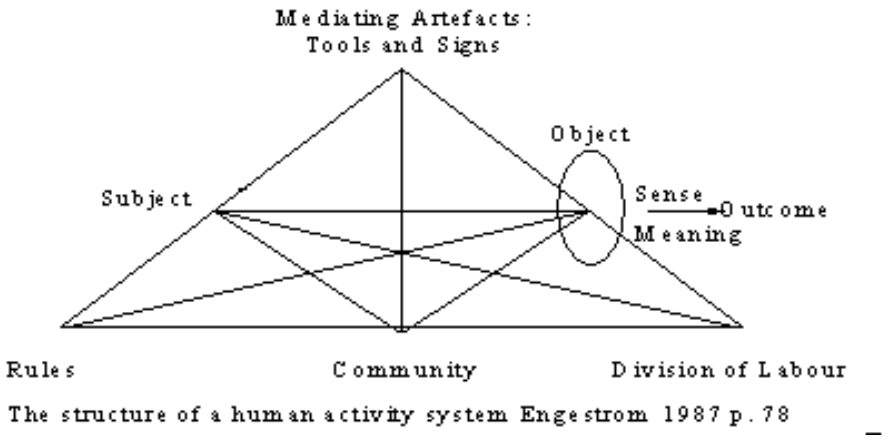


Figure 4.4: The second generation of activity theory

4.4.4 The third generation of activity theory: Engestrom

This generation as proposed by Engestrom is an expanded version of the second generation framework (figure 4.5). The aim of this generation is to develop conceptual tools in order to understand and examine the multiple perspectives, the dialogue, and the networks of minimally two interacting activity systems (Engeström 2001). Engestrom (1999) suggested that the basic unit of analysis for activity theory is the joint activity, not the individual one, therefore the basic model is expanded to include minimally two interacting activity systems. This expansion is based on the idea of multivoicedness and dialogicality between the interacting activity systems. Furthermore, the object in the third generation moves from being a situated and unreflected object (object 1), to a collectively meaningful constructive object (object 2), to a potentially shared or jointly constructed object (object 3). Clearly, the object of activity in this generation is a mobile or moving target which is not reducible to conscious short-term goals (Engeström 2001).

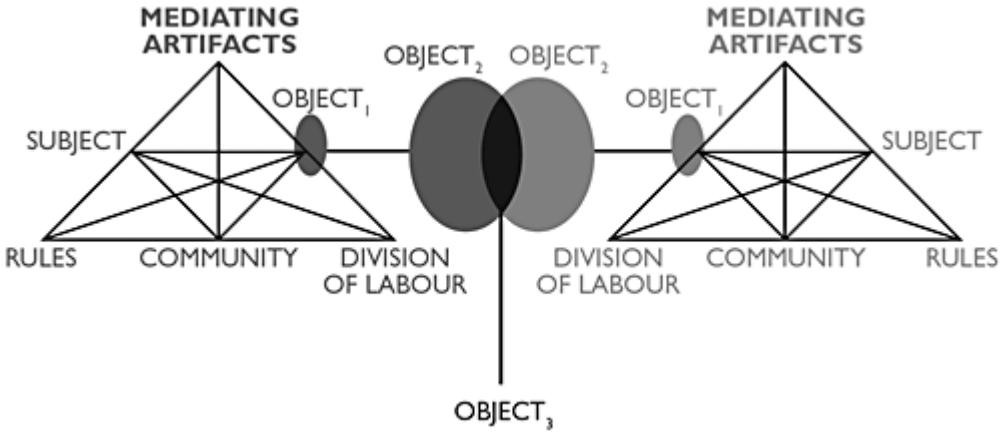


Figure 4.5: The third generation of activity theory (Engeström 2001)

The complex concepts involved in these three generations of activity theory development are defined and explained in greater detail in the following sections.

4.4.5 Components of activity system

The components of an activity are organized into an activity system. The activity system is depicted as a triangle. Each activity system contains interacting elements or components, namely subject, object tool, division of labour, community and rules.

The subject

The subject of any activity could be an individual or a group of individuals engaged in this activity, and the activity systems are perceived from their points of view (Jonassen 2000).

The object

The object represents the intention or problem that motivates the activity. It provides the purpose or goal for which the participants' actions are constructed and directed. Also, the object could be a physical or mental product acted on by the

subject (Jonassen 2000). For Engeström (2001), the object is more than the merely the individual motive driving the activity, rather it is a collectively shared object. He defined the object as "the raw material or problem space at which the activity is directed and which is moulded and transformed into outcomes with the help of physical and symbolic, external and internal tools" (Engeström 1993, p.67). Whatever the object is, it is not immutable, rather it is transformed as the activity unfolds (Nardi 1996).

The tools or mediating artefacts

Tools or mediating artefacts are the means the subject uses to act on the object. The tools element represents the mediation principle in the activity system. Tools can be anything used for the transformation process, including physical tools such as computers, or psychological or mental tools such as language and concepts. The use of cultural tools shapes the way subjects act and think. Therefore, it can be argued that the use of tools changes or influences the human activity and also they are changed and influenced by the human activity. As a result, tools cannot be applied and used identically in different contexts (Jonassen 2000).

Community

The community element represents those who work collaboratively with the subjects and who have a shared interest in the object and outcomes of the activity. This element represents the macro level or the collective perspective of the activity (Greenhow and Belbas 2007).

Meaningful activity is rarely accomplished individually, because individuals are members of a community, or different communities that have a shared purpose or object. Therefore,

"the human individual's activity is a system of social relations. It does not exist without those social relations" (Leont'ev, 1981, pp. 46-7). The function of the community within the activity systems is to distribute the cognitive responsibility among participants to achieve a shared object. In other words, the activity is distributed between the subjects and the community in which they are involved and interact (Jonassen 2000). According to (Jonassen 2000), "human cognition is always situated in a complex sociocultural world that affects individual cognition".

Although the goal of learning communities should be learning, some contradictions may arise within or between different activity systems that may hinder the learning process. These contradictions may emerge because subjects of the activity are simultaneously members of various communities and they must continuously change or adjust their roles and actions to meet the socially accepted expectations of the different communities. Consequently, these different expectations create some conflicts between subjects' roles in the various communities, which may lead to transformational activities to deal with those contradicting expectations (Jonassen 2000).

Division of Labour

This element represents the explicit and implicit roles and responsibilities which subjects assume when carrying out specific activity (Greenhow and Belbas 2007). Also, it refers to both the horizontal division of tasks and responsibilities between cooperative members of the community and also to the vertical or hierarchical division of power and status (Engestrom 1999).

The rules

This element represents the explicit and implicit regulations, policies, laws, expectations, norms and conventions that may constrain and influence the tools by which the activity is carried out (Greenhow and Belbas 2007). Moreover, rules guide to some extent the actions or activities acceptable by the community, so tools or mediating artefacts that the community uses will mediate this guiding process (Jonassen 2000).

4.4.6 Five principles of the third generation of activity theory (Engeström 2001)

The first principle: the prime unit of analysis is "a collective, artifact-mediated and object- oriented activity system, seen in its network relations to other activity systems". Individual's or group's actions are subordinate units of analysis and can be understood only when interpreted against the backgrounds of the entire activity system(s) (Engeström 2001, p.136).

The second principle: the multi-voicedness of activity systems

The activity system is considered as a community which includes multiple points of view, different interests and traditions, because the participants have their own diverse histories. The division of labour in the activity system helps highlight these differences. This multi-voicedness is a source of problems, contradictions, innovation, and transformation (Engeström 2001).

The third principle: historicity

Activity systems are not static, rather they get shaped and transformed over time. Moreover, "their problems and potentials can only be understood against their own history. History itself needs to be studied as local history of the activity and its objects and as history of the theoretical ideas and tools that have shaped the activity" (Engeström 2001, p.136).

The fourth principle: the central role of contradictions as sources of change and development.

Contradictions are "historically accumulating structural tensions within and between activity systems" that generate conflicts or disturbances that lead to change and development (Engeström 2001, p.137). They are "fundamental tensions and misalignments in the structure that typically manifest themselves as problems, ruptures, and breakdowns in the functioning of the activity system" (Virkkunen and Kuutti, 2000, p.302).

Engeström (1987) identified four types of contradictions:

1- Primary contradictions: this type of contradictions could occur within each of the components in the same activity system.
2- Secondary contradictions: they could occur between components of the central activity system.
3- Tertiary contradictions: they could occur between the objects of the central activity system and the object of neighbouring activities (in case if there are two or more activity systems).

4- Quaternary contradictions: they could occur between the other components of the central activity and its neighbouring activities.

The fifth principle: the possibility of expansive transformations in activity systems.

Aggravation of contradictions within the activity systems result in some participants beginning to question and deviate from the established norms, which in turn may lead to change. (Engeström 2001) argued that "an expansive transformation is accomplished when the object and motive of the activity are reconceptualised to embrace a radically wider horizon of possibilities than in the previous mode of the activity". He also added that a complete transformation cycle is a collective effort through the ZPD of the activity.

4.5 Summary

This chapter discussed the history of Vygotsky's sociocultural theory development. Then, presented the tenets, generations, components and principles of Activity Theory. The next chapter will present the methodology and methods of this research.

CHAPTER FOUR: METHODOLOGY AND METHODS

5.1 Introduction

The chapter begins with a statement of the study aims, followed by a detailed account of the methodological approach that was used in the study. A discussion of the underpinning philosophical assumptions that informed the selection of the research design is also presented. The subsequent sections provide a detailed description of the research design, the participants and setting, the methods of research and the procedures utilised for data collection, as well as an analysis and summary of the ethical issues which arose during the study.

5.2 Research aims and objectives

The aims of this study were to:

Aim 1: Explore the pedagogical value of the e-portfolio as a learning tool for nursing students:

Related Objectives:

- Identify the learning activities that are undertaken by the students with the support of the e-portfolio as a mediating tool.

- Explore the mediational role and value of the e-portfolio in helping the students to carry out each of these learning activities and in receiving support from their tutors and facilitators.

Aim 2: Investigate the contextual challenges that affect the role of the e-portfolio as a means of mediating the students' learning activities and identify the underlying contradictions that generate these challenges.

Related Objectives:

- Understand how the sociocultural context constrains the students' use of the e-portfolio
- Identify the challenges the students may experience while carrying out their learning activities using the e-portfolio.
- Trace the root causes of these challenges through an exploration of the contradictions that generate them.
- Identify the implications of these challenges and contradictions for the use of the e-portfolio as a means of mediating the students' learning activities.
- Identify how the students and their tutors are able to resolve these contradictions.

5.3 Methodology

5.3.1 The qualitative research approach: selecting the approach:

A qualitative research approach was considered appropriate as the method of inquiry in this study for a variety of reasons. First, the study sought a deep and rich understanding of the pedagogical value of the e-portfolio for as reflective tool for nursing students and of the challenges that can affect its value. A qualitative approach was chosen, as it would provide a rich and detailed description of the phenomenon being studied, which would help to capture the complexity of the

phenomenon and its essential and unique aspects (Sofaer, 1999). In qualitative research, more attention is paid to the process involved than to the outcome or product (Ploeg, 1999).

Second, a qualitative approach seeks to understand the phenomena under investigation from the perspective of the participants and to understand the meaning they have constructed about their world and how they interpret and make sense of their experiences in life (Mack and Woodsong, 2005;Merriam, 2009). It empowers and gives a voice to the participants, allowing them to share their stories and assist researchers in seeing the world and understanding the phenomena through their eyes (Merriam, 2009;Cohen et al., 2011). This notion is in line with one of the basic principles of Activity Theory, which states that an activity under investigation should be understood from the subjects' perspective (Jonassen, 2000). Consequently, the aim of this study was to ensure that the students involved had the opportunity to describe how they perceived the value of the e-portfolio as a mediator for their learning activities, as well as explain the challenges they encountered.

Third, a qualitative approach can enhance the understanding of the context in which phenomena occur as well as the phenomena themselves. It is difficult to separate people's actions and words from the context in which they take place (Creswell, 2007), therefore, a qualitative inquiry requires an investigation into the context, as well as the specific phenomenon under investigation, to allow for better understanding (Patton, 2002b). Lawrence-Lightfoot and Davis (1997) states that: "The context is rich in clues for interpreting the experience of the actors in the setting. We

have no idea how to decipher or decode an action, a gesture, a conversation, or an exclamation unless we see it embedded in context" (Lawrence-Lightfoot and Davis, 1997, p.41) Similarly, Activity theory posits that human activities are complex and cannot be understood or analysed outside of their context (Kuutti, 1996). This study aimed to understand how the sociocultural context enabled or constrained the students' use of the e-portfolio to carry out their learning activities. Therefore, a qualitative approach was deemed appropriate to uncover these underlying constraints.

In conclusion, it can be argued that a qualitative research approach was the appropriate method of enquiry for this study. Moreover, it dovetailed with the Activity theory framework to provide an in-depth description and explanation of the phenomenon under study.

5.3.2 The underpinning philosophy: understanding the approach

A qualitative inquiry includes a variety of philosophical approaches. Each approach has different implications concerning how the research should be conducted, with regard to the selection of the methods for data collection and analysis (Merriam, 2009;Creswell, 2007). Thus, qualitative researchers are always encouraged to carefully consider their own philosophical position and determine their ontological assumptions (views about the nature of social reality) and epistemological assumptions (how knowledge about this reality developed) (Cohen et al., 2011;King and Horrocks, 2010). The philosophical stance that underpins this research is informed by critical realism. Below is a brief summary of the basic principles of critical realism, followed by a description of its relationship with Activity Theory. The final

section presents the justification for using critical realism as the underpinning philosophical approach in this study

5.3.2.1 The tenets of critical realism

Critical realism was developed in response to dissatisfaction with the limitation of using only positivism or interpretivism. Critical realism is viewed as the "third way" between these two extreme approaches (Allen et al., 2013) because it retains a ***realist ontology*** (the belief that there is a real world out there that exists independently of our knowledge, perceptions and constructions of it), while accepting an **interpretive/constructivist** epistemology (the belief that our knowledge of this world is only a construction of our own minds and perspectives and, thus, that knowledge is socially and historically relative) (Maxwell, 2012). Since our knowledge of the external world is socially constructed, critical realists assert that the external world cannot be fully understood through our sensory perceptions and that our knowledge about it fallible and never complete (Owens, 2011). Therefore, any claims concerning our knowledge about the world must be scrutinized and judged carefully through research and scientific study (Sayer, 2000).

Critical realism holds that some aspects of reality are hidden from our experience because they are beyond our perception of them (Guba, 1990;Owens, 2011;Sayer, 2000). Critical realists hold the belief that reality is multi-layered and the deepest layer of reality is beyond what one can see and experience in everyday life. Bhaskar (1998) posits three layers or domains of reality (see figure 4.1). There is the ***real domain*** that consists of mechanisms, structures, powers and tendencies that generate or activate events. Then there is the ***actual domain*** that includes all the events (observed and

unobserved) that are generated by the mechanisms in the real level. Finally, there is the ***empirical level***, which contains only the events that can be observed through our senses (Bhaskar, 1998). Researchers in social science are encouraged to go beyond the empirical level and discover what is behind the "surface appearance" of the observable events. In other words, they are encouraged to uncover the underlying mechanisms and structures that will explain the observed events (Jakobsen, 2011). Bhaskar (1989) argues that it is only through the identification of these mechanisms that we will be able to understand, explain and, therefore, change the social world.

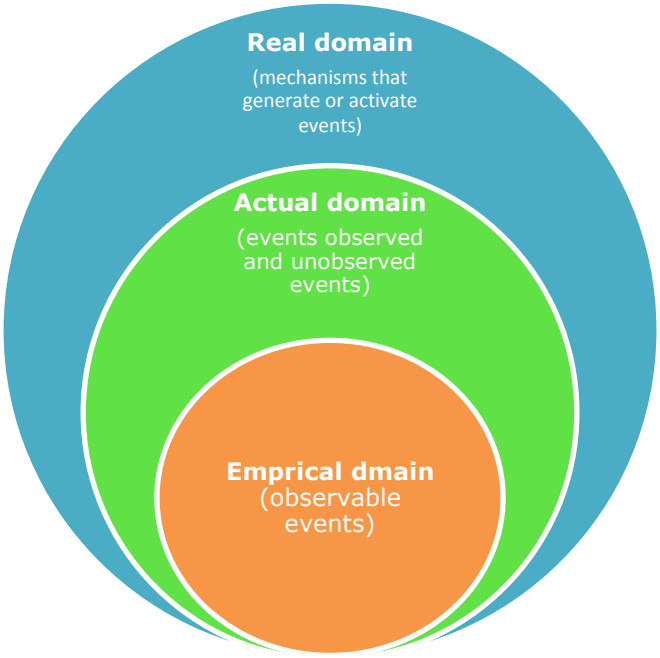


Figure 5.1 Domains of reality, modified from (Mingers and Willcocks, 2005)

In conclusion, Critical realists argue that positivism and interpretivism have failed to produce a deep and rich account of reality because of their limited analytical ability. Positivism provides a superficial description of observed reality (the empirical domain) because it describes only the observable events. Interpretivism provides a superficial explanation of reality (the actual domain) because it relies only on explaining the pattern of events. In contrast, critical realism provides a deep and comprehensive account of reality (the real domain) because it uncovers the underlying generative mechanisms that can either constrain or enable these events.

5.3.2.2 Critical realism and Activity Theory

The complexity of the relationships between events and their generative mechanisms and structures sometimes leaves researchers helplessly trying to find explanations or answers for questions such as why certain events happened in a particular way, and how, and under what circumstances, these events were experienced by the participants (Pawson and Tilley, 1997). In response to this issue, critical realists suggest that the researcher can use theories to help understand and explain the underlying mechanisms behind the phenomenon under study (Danermark, 2007). It has been suggested that 'scientific theories explain observable phenomena by describing the mechanisms and structures through which various, often unobservable entities possess the "power" to generate occurrences.' (Keat and Urry, 1982). Thus, Activity Theory has been used in this study as a methodological and analytical framework to help uncover and explain the underlying mechanisms and structures that shaped the role of the e-portfolio in mediating the students' learning activities.

In this study, it is argued that Critical Realism and Activity theory complement each other philosophically and methodologically. They both seek to uncover, understand and explain the underlying mechanisms and structures that give rise to events/activities rather than merely describing the observable features. Furthermore, they both focus on the importance of context and acknowledge its effect on the phenomenon being studied. Critical realists assert that the causal mechanisms that generate the events always exist in a social context. This context includes factors that may constrain or enable these mechanisms to operate and generates events, hence, an understanding the effect of the context on these mechanisms is rendered essential (Wilson and McCormack, 2006). Similarly, Activity theory posits that any human activity is situated within a context that consists of interrelated elements that can influence the activity. These elements include the implicit and explicit rules which govern the activity, the community involved, and the division of labour, that is, the way tasks and roles are divided among the subjects and the community (Park, 2015).

5.3.2.3 The justification for using critical realism

The use of a critical realism approach alongside Activity Theory allowed for more ontological depth in this study. The study aimed at more than merely describing the patterns of how the e-portfolio mediated or facilitated certain learning activities. Rather, the aim was to understand and explain how these patterns were shaped and influenced by the *generative mechanisms* that were derived from the *structures* of its context. The activity system triangle was used as a framework to uncover the underlying structures (rules, community, and division of labour) and mechanisms (such as

level of support and guidance from the community, understanding of roles and responsibilities and clarity and compliance with the rules and regulations) of each learning activity and explore their influence in terms of shaping events/effects (the way the e-portfolio mediated and supported each learning activity).

5.3.3 The research design

5.3.3.1 Selecting the appropriate design

Qualitative research is not a single method. Rather, it is an umbrella term that covers a variety of research designs. These designs vary in terms of: their focus, the epistemological and ontological assumptions they adopt, and the way data are collected, analysed and presented (Merriam, 2009;Creswell, 2007;Denzin and Lincoln, 2003). The selection of an appropriate research design is guided by the nature and purpose of the research and the researcher's philosophical position concerning the nature of reality, knowledge and truth (Creswell, 2007;Mills et al., 2008;Yin, 2014). In the case of this study, a number of factors informed the choice of the appropriate research design (listed below).

An appropriate research design for this study should:

- Allow for an in-depth understanding of the phenomena of interest (in this case, the pedagogical value of the e-portfolio for nursing students)
- Capture the uniqueness and complexity of the phenomena as well as the context in which they are situated.
- Allow for multiple data collection methods to be used in order to capture the complexity of the phenomena.

- Capture the phenomena from the perspectives of different types of participants (such as students, tutors and curriculum planners)
- Allow for data collection to be done over a relatively long period of time.
- Be consistent with the assumptions of critical realism and principles of Activity Theory in terms of appreciating the context in which the phenomenon/activity exists and allowing for an exploration of the underlying mechanisms and structures within the context that produced the events.

After careful consideration of the aforementioned criteria, a case study design was found to be most suited for this study. The case study is a research design that allows for in-depth and comprehensive exploration and analysis of a contemporary complex phenomenon, unit, activity, individual, group of individuals, or system within its real life setting (Stake, 1995;Creswell, 2007;Merriam, 2009;Yin, 2014;Yin, 2012). To capture the complexity of a phenomenon and achieve a comprehensive understanding of it, the case study approach relies on using multiple data sources and viewpoints to explore the phenomenon over a period of time (Stake, 1995;Creswell, 2007;Yin, 2014;Ritchie and Lewis, 2003). The "distinctive need" to use a case study design originates in an interest in exploring and understanding a complex phenomenon (Yin, 2012). This study considers the pedagogical value of e-portfolio to be a complex phenomenon comprising different processes, activities, variables, relationship, and mechanisms. The features of the case study design ensured that this phenomenon was explored in a significant amount of depth, through different lenses, and, over a considerable amount of time (nearly two years).

Moreover, the case study approach was thought to be particularly appropriate for this study, as an acknowledgement and understanding the contextual environment in which the phenomenon/activity existed was considered as an essential aspect. One of the distinctive features of a case study is that a phenomenon is explored "within its real-life context, when the boundaries between the phenomenon and context are not clearly evident" (Yin, 2014). It portrays the interaction between the contextual factors and the phenomenon over a period of time (Merriam, 2009). A focus on the context is congruent with the basic principles of both Activity Theory and critical realism. Activity theory posits that human activity can only be understood and explained within its context, taking into account the sociocultural historical aspects (Kaptelinin et al., 1995). It *"focuses on whole systems of activity; rather than considering individuals in isolation, it situates individuals within the activity system(s) in which they are involved"* (Murphy, 2013). Therefore, it was felt that a case study was a preferable approach to use for studying contradictions, particular in research into educational technology, such as in the case of this study (Murphy, 2013, P.448). The use of a case study as a research design combined with the choice of Activity Theory as a framework has gained popularity in recent years in research into educational technology (Basharina, 2007;Berge and Fjuk, 2006;Fåhræus, 2004;Russell and Schneiderheinze, 2005;Barab et al., 2002). In this study, the use of a case study alongside Activity Theory allowed for an in-depth exploration and a thick description of the context in which the use e-portfolio was situated. It also allowed for an identification of the challenges and contradictions that

emerged within the context and impacted the use of the e-portfolio as a means of mediating the learning activities.

Similarly, it is argued that a case study design is well suited to research that is informed by critical realism, the underpinning philosophical approach adopted in this study (Easton, 2010). Research underpinned by critical realism demands researchers achieve a sufficient depth of data collection and analysis in order to be able to explore the underlying structures and mechanisms at play within the context (O'Gorman, 2013). A case study design, particularly when applied longitudinally, is widely recognized for its ability to provide researchers with the opportunity to engage in an in-depth exploration of a complex phenomenon and expose its underlying causal mechanisms (Eisenhardt and Graebner, 2007). It is also argued that a case study approach is well suited for research with an objective of understanding "how" and "why" things are the way they are (Easton, 2010). The use of a case study design brought a notable advantage to this study. It helped in generating rich data and allowed for an in-depth analysis of this data. This subsequently allowed for an analysis of how the e-portfolio mediated the learning activities and an understanding of the root causes of the challenges encountered by the participants.

In conclusion, the case study design fulfilled all the previously set criteria for an 'appropriate' research design. It allowed for: an in-depth understanding of the phenomenon over time and the complexity of the context, the use of different data sources from different perspectives and the identification of the underlying structures and mechanisms at play.

5.3.3.2 Longitudinal instrumental case study design

Stake (1995, 2005) identified three types of case study namely: intrinsic, instrumental and collective (multiple) case studies. In an *intrinsic case study*, the researcher focuses on gaining a deeper understanding of a particular case because of its uniqueness, not for the purpose of making a generalization or building a theory. In an *Instrumental case study*, the researcher examines a particular case in order to gain a broader understanding of and insight into an issue. The case itself is not of primary interest and it is examined only to facilitate our understanding of something else. A *Collective case study* focuses on studying a number of cases in order to investigate a particular phenomenon (Stake, 2005).

The aims of this study were to understand the pedagogical value of the e-portfolio for nursing students, as well as to identify the contextual challenges and contradictions that might affect its role in mediating their learning activities. Clearly, the focus was not a particular group of nursing students who used e-portfolios, rather, the focus was on gaining a deeper understanding of the pedagogical value of the e-portfolio and uncovering the underlying structures and mechanisms that either enabled or constrained the role of the e-portfolio in mediating the participants' learning activities. Therefore, this study is best described as an *instrumental case study* because the focus was not on the people involved, instead, it was on the insights they provided concerning the issue. Therefore, the group of students who formed the case in this study were merely an instrument (typical case) for understanding the pedagogical value of e-portfolios and shedding the light on the challenges and contradictions that

may be common to other students or entities who use e-portfolios.

5.3.3.3 Defining the case, the unit of analysis and the boundaries

Defining the case, that is what is to be considered as part of the case, was considered the most important step in designing the case study. Firstly, it is helpful to frame the scope of the study. Defining the "case" to be studied is informed by the research questions or aims of the study in question (Stake, 1995;Yin, 2012;Creswell, 2007). The case is defined as a bounded system, which has pre-set boundaries that characterize what it is. Anything beyond these boundaries should not be included in the study (Miles, 1994; Merriam, 2009). These boundaries could be spatial, temporal or any other concrete boundaries. Identifying these boundaries clarifies the relevant individuals to be interviewed and/or observed, the setting or geographical area of interest, the time and duration of the data the data collection, and the type of information to be collected for the case (Creswell, 2007; Merriam, 2009).

This study sought to understand the pedagogical value of the e-portfolio for nursing students. Since the data required to answer this question were mostly available from the students, the "case" in this study was defined as: a group/cohort of nursing students who used an e-portfolio as a part of their course. The information gained from the students helped to identify the learning activities for which they were using the e-portfolio and it also provided insights into the how e-portfolio facilitated or mediated each of these activities. Based on that, a decision was taken to consider these learning activities to be the main unit for analysis in this study. This

decision was informed by the basic tenet of Activity Theory, which considers "activities" as the basic unit for analysis, taking into account the larger contextual system in which these activities are situated. This larger system comprises other elements that may constrain or enable the subjects (students) to perform the activity. These elements are the mediating tools, community (other actors), the division of labour among the community, and the rules and conventions of the activity. Activities are understood within their context through an exploration of the relationship between all of these elements and an exploration of their effect on the activity.

The elements of the activity system acted as a guide to clarify the boundaries of the case in this study. For instance, it helped to identify the relevant groups of people who needed to be included in the study in order to gain an in-depth understanding of pedagogical value of the e-portfolio and its related challenges. The *subjects* were the students who used the e-portfolio to carry out the activity. The *community* consisted of the tutors/facilitators whose role was to use the e-portfolio to support the students to carry out their learning activities. Following this, in order to understand the elements concerning rules and division of labour, there was a need to include some of the curriculum planners who participated in designing the course and were involved in setting the rules, policies, responsibilities related to the use of e-portfolio within the course. Involving different actors (tutors, and curriculum planners) who were not the focus of the case helped to illuminate the case, providing a richer picture and showing, from different angles, different aspects of how the e-portfolio mediated the students' learning activities and how they

viewed the challenges of using the e-portfolio. Figure 5.2 shows the case composition.

Moreover, the structure of the activity system was also useful in choosing the data collection methods to be used as a means of fully understanding the components of each activity system, how the e-portfolio mediated each activity and the challenges and contradictions that emerged from context, influencing the use of the e-portfolio for carrying out the activity. The data collection methods will be explained in detail later in the chapter.

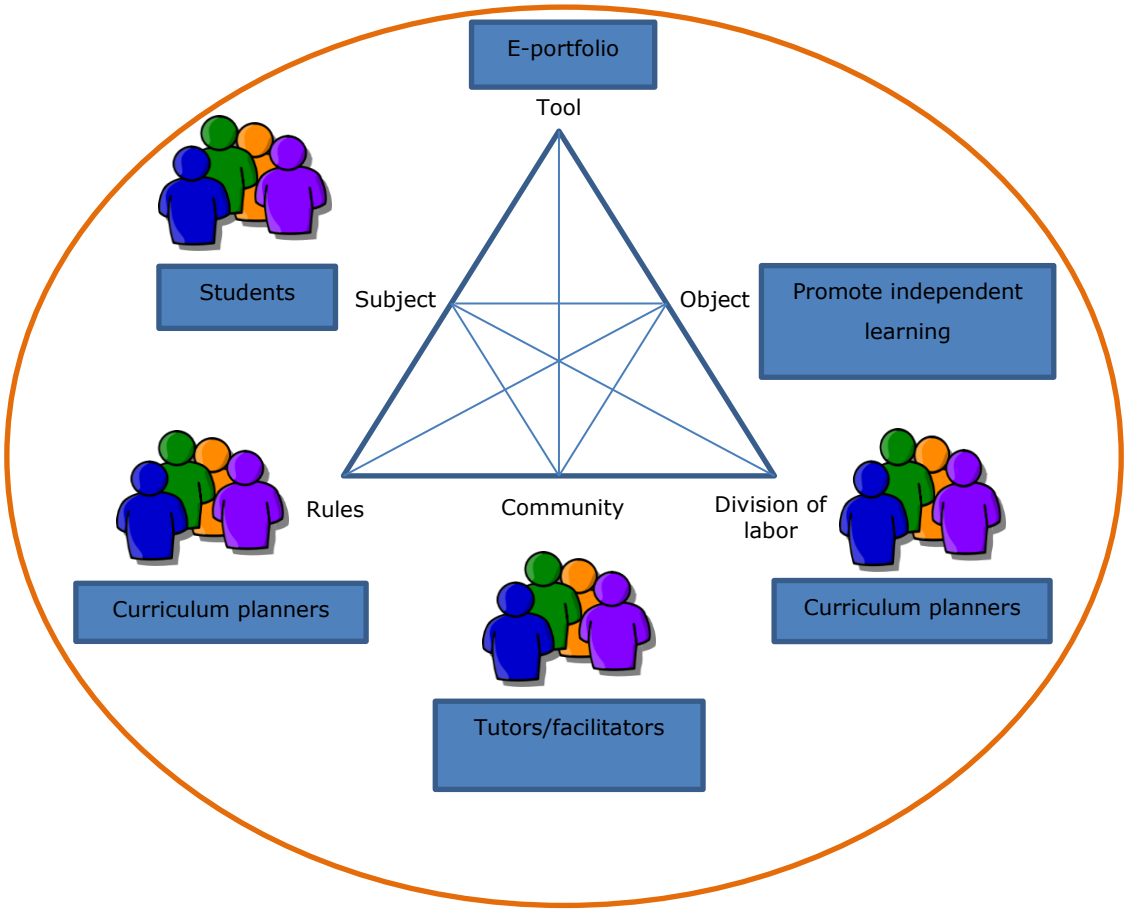


Figure 5.2: the case composition

5.3.4 Data collection methods

The case study excels at developing a thorough understanding of a complex phenomenon (case), through the use a variety of data collection methods (Creswell, 2007;Cohen et al., 2011). It has been argued that "no single source has a complete advantage over all the others. In fact, the various sources are highly complementary, and a good case study will therefore want to use as many sources as possible" (Yin, 2009). The use of multiple data collection methods, to approach a phenomenon from different angles, has been advocated, to create richer insights that demonstrate the multifaceted nature of the phenomenon and its context (Merriam, 2009); (Yin, 2009). It also necessary for data triangulation, where the data collected from different sources are compared to each other to see whether they corroborate, conflict, or complement each other (Silverman, 2006). Similarly, it is argued that research using Activity Theory as a methodological and analytical framework requires researchers to collect data from a variety of sources in order to develop a fuller understanding of the activity system(s) under investigation, as well as to triangulate the evidence in order to produce more trustworthy results (Yamagata-Lynch, 2010). Comparably, proponents of critial realism argue that using multiple sources of data collection enables researchers to obtain multiple forms and represenatations of the phenomena under investigation. A comparison of these representations will allow researchers to find any similarities and differences and uncover the uderlying mechanisms and structures that produced the observable events. This will enable researchers to move considerably closer to an understanding of the reality of the real domain (Burgess and Newton, 2014). The purpose of this

study, the design used and the underpinning philopsopcal and theroretical assumptions suggested that one single source of evidence would not be enough to understand the phenomena under investigation and that multiple sources would be necessary for an in-depth understanding of the phenomena and to achieve the research aims. Therefore, the study employed a number of data collection methods, including semi-structured interviews, online observation and document analysis.

5.3.4.1 Qualitative interviews

Qualitative interviews are one of the most commonly used methods for data collection in case study research (Yin, 2014). This method was chosen to be the primary source for data collection in this study, due to its potential to provide rich data, which can, in turn, lead to thick descriptions of the phenomenon. The interview method, in qualitative research, aims to capture and describe individuals' perspectives of their experiences as they have lived and made sense of it (Denzin and Lincoln, 2003). A key difference between interviews and other methods of data collection is that they empower people and allow their voice to be heard, in addition to allowing the researcher to ask questions, clarify things and probe for further information (Cohen et al., 2011). It also allows the researcher to engage directly in a conversation with the participant(s) in order to discover their outer as well as inner world that is invisible to others (Schultze and Avital, 2011). In this regards, Patton (2002a) further added:

> *"We interview people to find out from them those things we cannot directly observe…we cannot observe everything. We cannot observe feelings, thoughts, and intentions. We cannot observe behaviours that took place at some previous point in time. We cannot observe situations that preclude the presence of an observer. We cannot*

observe how people have organized the world and the meanings they attach to what goes on in the world. We have to ask people questions about those things." (Patton (2002a)

Merriam (2009) identifies three types of interviews in terms of the degree of structure: highly structured (standardized), unstructured, and semi-structured interviews. *Structured interviews* are most often employed in quantitative research, particularly surveys. This type of interview requires the researcher to strictly adhere to a predetermined set of questions and guide the participants' responses. The problem with the structured interview is that it only allows for limited answers from the participants and it does not allow for in-depth understanding of the participants' views of their world. Therefore, examining a complex phenomenon using a structured interview would be difficult. Consequently, it was not chosen as fit for the purpose of this study. In contrast, *unstructured interviews* are more of a conversation than an interview in nature. There is no predetermined set of specific questions the researcher should use. Rather, the researcher might start the interview with a very broad set of questions and then proceed accordingly, based on the participant's answer to the first question. This type of interview is useful when there is not enough known about the phenomenon and there is little guidance on what to ask about (Merriam (2009). In this case the interviewer must "go with the flow" (Patton, 2002a). The problem with unstructured interviews is that they are very time consuming and they need a skilled researcher to handle the large amount of the data produced, which may seem to be unconnected and divergent (Merriam, 2009;Gill et al., 2008). Accordingly, this type of interview did not seem to serve the purpose of this study. The semi-structured interview lies somewhere in the middle of the

structured-unstructured continuum. Unlike the unstructured interview, this type of interview is guided by an interview guide where predetermined themes or open ended questions need to be covered. It is also more flexible than the structured interview as it allows the researcher to change the sequence of questions as needed during the interview. Furthermore, it provides researchers with the opportunity to probe the participants to clarify and elaborate on their responses, add impromptu questions to follow up certain areas that may emerge during the interview (Merriam, 2009;Gill et al., 2008;DiCicco-Bloom and Crabtree, 2006). Therefore, the semi-structured interview seemed the appropriate model to use in this study, because it allowed the participants to freely articulate their perspectives on the value of their e-portfolio as a learning tool and, at the same time, it satisfied the researcher's need to cover certain topics and follow up on new ideas introduced and issues raised by the participants during the interview. This, in turn, allowed for new themes to emerge. In this study, semi structured interviews were conducted individually and face to face with three categories of participants: students, tutors and curriculum planners. The procedure of these interviews will be expounded in the "Study procedures" section in this chapter.

Two rounds of interviews were conducted at different stages with each student and tutor. For the curriculum planners, different individuals were recruited to take part in the follow-up interviews, in order to gain different perspectives on the implementation of the e-portfolio in the school.

The analysis of the initial interviews revealed that the students found the e-portfolio useful, as a means of

facilitating and supporting particular learning activities. It also showed that there were some challenges and contradictions that impacted each of these activities. Therefore, it was deemed worthwhile to conduct follow up interviews, to explore how the e-portfolio mediated these activities in more depth. The questions in the follow up interviews were designed to dig deeper in order to gain a greater understanding of the mediational role of the e-portfolio in each of the identified learning activities and was also tailored to determine the challenges that impacted its mediational role and the activity as a whole. Generally, in these followup interviews, students and tutors gave their perspectives on emergent issues relating to the pedagogical role of the e-portfolio as a learning tool, one year after the first interviews. In terms of the benefits of follow up interviews, Maykut and Morehouse (2002) assert that: "in many studies the interviewee is interviewed more than once, pursuing in subsequent interviews topics that emerge as important from preliminary data analysis. This kind of persistent involvement with interviewees makes it more likely that the researcher will come to understand at a deeper level their perceptions related the phenomenon under study". This idea appears to fit well with the philosophical approach adopted in this study, critical realism, which aims to uncover the underlying structures and mechanisms behind certain processes. The follow up interview in this study provided the opportunity to go below the surface of what the participants might have said in the initial interviews and unearth the real meaning and mechanisms that underpinned the way they used and perceived the value of the e-portfolio.

Table (5.1) summarises the purposes of the initial and follow up interviews for each category of participants. Interview

guides were developed for each of these interviews (See Appendix A). The guides included open ended questions, which were based on the purpose of these interviews.

The questions were formulated in a way that elicited information about each of the components of the activity system (subjects, tools, division of labour, rules, objects and outcomes).

5.3.4.2 Online observation

Observation is considered to be one of the data collection methods that can help researchers to develop a good case study (Mills et al., 2009). It enables researchers to observe what is actually happening in the natural setting in which the phenomenon occurs (Cohen et al., 2011), as well as to collect live, authentic data directly from its natural setting, rather than relying solely on what the participant offers during the interviews. The data obtained through observation can be used as a "reality check" against the participants' narrative because what people actually do and what they say they do might be completely different things (Robson, 2002;McKinney and Spialek, 2017). In comparison with other data collection methods, observation helps researchers to have a better understanding of the sociocultural context in which the participants' behaviours, activities and relationships are situated (Bogdan and Biklen, 2007;Varis, 2016).

Table 5.1 The purpose of the initial and follow up interviews for each category of participants

	Initial interviews	Follow up interviews
Students	**Elicit in-depth information about:** - Their initial use of the e-portfolio. - Their perception of the value of the e-portfolio - Which learning activities the e-portfolio was supporting and facilitating and how it mediated them. - Challenges they encountered and how such challenges hindered their use of the e-portfolio in carrying out their learning activities and how they overcame these challenges, if possible.	**Follow up and explore in more depth:** - Their perception of the value of the e-portfolio as a means of supporting their learning activities. - How the e-portfolio mediated the activities that they had previously identified. - Any new activities found to be facilitated by the e-portfolio after the initial interviews. - Any further challenges they encountered and how such challenges hindered their use of e-portfolio for carrying out their activities and how they overcame them, if possible.
Tutors	**Elicit in-depth information about:** - Their perception of the value of the e-portfolio for supporting their students' learning	**Follow up and explore in more depth:** - Their perception of the value of the e-portfolio in supporting their students' learning

	- For which learning activities their students were using the e-portfolio. - How the e-portfolio helped them to support their students in carrying out their learning activities. - Challenges they encountered and how such challenges hindered their use of the e-portfolio for supporting their students and how they overcame them, if possible.	- How the e-portfolio helped them to support their students in carrying out their learning activities. - Challenges they encountered and how such challenges hindered their use of e-portfolio for supporting their students and how they overcame them, if possible.
Curriculum planners	**Elicit in-depth information about:** - The reasons for and the way the e-portfolio was introduced to the students and tutors. - The way the e-portfolio was integrated into the curriculum. - The roles and responsibilities of the students and the tutors in using the e-portfolio - The rules and policies within the school/university that governed or affected the students and tutors' use of the e-portfolio. - The support given to the students and tutors in using the e-portfolio. - The challenges faced in integrating the e-portfolio in the course	**Follow up and explore in more depth:** - The way the use of e-portfolio had evolved since it was first introduced. - Challenges reported by the students and tutors in using the e-portfolio - Any changes in the e-portfolio implementation on the course as a response to the challenges faced by the students and tutors.

Traditionally, observation of social situations takes place in a typical physical setting or field (Joinson, 2007). However, the rapid growth of the internet has enabled a new form of observation to emerge, that is, ethnographic or online observation where researchers can observe social situations online in non-physical or virtual settings (Hine, 2005;Garcia et al., 2009;Skågeby, 2011;Varis, 2016). There has been a growing interest in the use of the use of online observation to study the students' practices, behaviours, and activities in online learning environment, including discussions within the field of educational research (Williams, 2007;Given, 2008;Kulavuz-Onal and Vásquez, 2013). Over the last few decades, students have increasingly been using online learning tools and environments to aid their learning. These environments can potentially be a rich source of observational data about the students learning and interactions (Liang, 2007;Parker Webster and Marques da Silva, 2013). Therefore, observing these environments may provide researchers with the opportunity to watch people acting and interacting live (Given, 2008;Jewkes, 2012;Parker Webster and Marques da Silva, 2013). In this study, the students' e-portfolio was viewed as a rich resource of information concerning the context in which the participants were situated. Therefore, observation of the e-portfolio was essential, in order to obtain a detailed description of the natural setting in which the phenomenon existed, explore the nature of the learning activities the students were undertaking within the e-portfolio and understand the interactions between the participants.

5.3.4.3 Document analysis

Document analysis was the final data collection method in this study. It is one of the research methods that is applicable to case study research. It is often used in conjunction with other data collection methods, however, it can be the main method for collecting data in some types of research, such as historical research (Mills et al., 2009). Document analysis can be defined as a systematic examination and interpretation of printed and/or electronic materials in order to develop understanding of and construct meaning from the phenomenon of interest (Corbin and Strauss, 2008). Documents can be any materials that contain information relevant to the case under investigation. These documents have already been created, exist prior to and are unrelated to the research at hand. Therefore, they are "unobtrusive" and "non-reactive" in relation to the subject that is currently under study (Bowen, 2009). (Yin, 2014) stated that "for the purpose of case studies, the most important use of documents is to corroborate and augment evidence from other sources" (Yin, 2014, p.103).

In this study, document analysis was used to understand the sociocultural context in which the participants and the e-portfolio were situated. The focus was on identifying the sociocultural factors within the context that might have influenced the students' execution of their learning activities. To be consistent with Activity Theory, a number of documents were analysed, to capture information related to the ***rules*** and regulations that governed the students' use of e-portfolio to perform their activities, the ***community*** with which the students were supposed to be interacting and receiving support from, the ***division of labour*** among the community

regarding the use of e-portfolio, and the nature and characteristics of the ***tool*** being used, that is, the e-portfolio. In addition, the document analysis helped to shed the light on any contradictions between these elements and uncover any inconsistencies between the data from the documents analysis and the data collected via other means.

5.3.5 Study procedures

5.3.5.1 Ethical approval

The participants in this study were healthy human volunteers– nursing students, tutors, curriculum administrators, who were based at one of the Schools of Nursing in the UK. Ethical approval to conduct the study was received from the Medical School Research Ethics Committee and the R&D Department in November 2012. A site specific approval was also granted by the School of Nursing in which the study was conducted.

5.3.5.2 Selecting the study/case site

The study was undertaken in one of the Schools of Nursing in the East Midland region in the UK. The choice of this site was entirely purposive. It was chosen for two reasons. The first was because the school met the criterion of using the e-portfolio in its undergraduate nursing program. The use of the e-portfolio in nursing schools is a relatively recent trend and, at the time, there were still many nursing schools using the paper portfolio (Jones et al., 2006). The chosen school had recently replaced its paper portfolio with an electronic portfolio system, PebblePad, as a part of a substantial curricular reform which aimed at moving toward a more a student-centred curriculum. As a result of this reform, the school had invested in and employed a variety of technologies

to enhance and support the students' learning. One of these technologies was the e-portfolio.

The second reason for selecting this school was a pragmatic reason, that is, the ease of obtaining access to the setting and the prospective research participants. One of the main concerns of qualitative researchers is gaining access to the field work site and researchers may spend a great deal of time trying to obtain access (Johl and Renganathan, 2010). Therefore, obtaining entry to the research site was an important consideration. In this study, the head of school and the program director through whom the research participants were recruited, when contacted, were cooperative and approved the researcher's access.

5.3.5.3 Sampling strategy: selecting the case and participants

Selecting the case

In case study research, sampling involves making decisions regarding the sample strategy to be used to select case(s), as well as the sample size, that is, the number of cases and individuals within the case(s) (Mills et al., 2009). Sampling in qualitative case study research is typically purposeful rather than random or representative. Purposive sampling includes the selection of "information-rich cases" from which the researcher can learn more and develop an in-depth understanding about the investigated issue or phenomenon (Patton (2002a).

In this study, the case was instrumental, that is, the case was examined in order to gain a broader understanding and insight into the pedagogical value of the e-portfolio for nursing students. The case itself was of secondary interest,

hence it was purposefully selected and examined for its potential to enhance understanding of and offer new insights into this phenomenon. This study subscribed to (Stake, 1995) assertion that the main selection criteria for selecting a case are determined in order to "maximize what we can learn" about the phenomenon at hand and reveal in-depth information that can help to answer the research questions. Stake argues that "potential for learning is a different and sometimes superior criterion to representativeness" (Merriam, 2009;Stake, 1995;Stake, 2005). In this regard, the cohort of students to which the e-portfolio was introduced within the previously chosen school was selected to be the instrumental case in this study. This cohort started their first year in September 2012 and therefore it was known as the "12/09 cohort". This cohort was viewed to have the potential to reveal in-depth information that would maximize understanding of the pedagogical value of an e-portfolio for nursing student and answer the research questions of this study. The following are the attributes that made this cohort an informative case to be used in this study:

- **The use of an e-portfolio for learning:** as a result of the curriculum reform, the e-portfolio was introduced to this cohort for pedagogical purposes. These purposes included enhanced communication with academic staff, for example in terms of eliciting feedback, the facilitation of reflection and the storage and organisation of their work in a secure, electronic place. Because of this, they were considered to be an appropriate case study for the purpose of understanding the pedagogical value of e-portfolio.

- **The heterogeneity and number of students:** The cohort comprised approximately 300 students in the first year and were a heterogeneous group in terms of their age (mature and young students), gender (male and female), nationality (home and international students), field of study (mental health, child, adult care), and previous qualifications (i.e. A level, degree students). This variation would allowed for the procurement of multiple perspectives and different representations of reality.

- **The ability to employ different data collection methods:** The researcher was able to use a variety of methods for collecting data from this cohort. Alongside the ability to interview the students, the access to their e-portfolio workspace offered the researcher the ability to observe their activities. Moreover, access to the pertinent documents for gaining better understanding of the context was also possible. Employing a variety of methods helped in obtaining a more comprehensive picture of the phenomenon at hand.

- **The availability of the students to be studied over long time:** The fact that the students were in their first year at the time of study made it possible for the researcher to study this cohort over a period of time in order to gain a deeper understanding of the pedagogical value of the e-portfolio. According to Stake (2005), it might happen that the case the researcher can best learn from is the one that is most easily accessible or is available for a long period of study.

The selection of participants

After selecting a case, a researcher still needs to make some choices regarding the individuals to be included within the case study (Merriam, 2009;Flick, 2008). As mentioned earlier, in the "Research Design" section, the case in this study comprised three categories of participants: students, tutors, and curriculum planners (see figure 4.2). The students were central to this study, however, based on the tenets of Activity Theory and critical realism the study needed to bring forth different perspectives on the use of e-portfolio and its value for nursing students in order to illuminate the case and provide a richer picture of the phenomenon. Similar to selection of the case, purposive sampling was also used to select the participants in this study. The selection did not aim for a representative sample, rather it aimed to obtain participants with different perspectives of the e-portfolio in order to add richness and improve the quality of information provided. This decision is supported by Stake's statement that "The choice is made, ensuring variety but not necessarily representatives, without strong argument for typicality, again weighted by consideration of access and even by hospitality, for the time is short and perhaps too little can be learned from inhospitable parents. Here, too, the primary criterion is opportunity to learn" (Stake, 2013).

The selection of Students and tutors

Both the students and tutors were selected based on the following criteria:

Inclusion criteria for students:

- Be first year student in the 12/09 cohort.

- Be enrolled in the adult, child or mental health nursing field.
- Use the e-portfolio to carry out their activities.
- Be willing to allow the researcher to access their workspace on the e-portfolio.
- Agree to take part in the follow up interview.

Inclusion criteria for tutors:

- Be a tutor for first year nursing students in the 12/09 cohort.
- Agree to take part in the follow up interview.

Selection of Curriculum planners

The curriculum planners were selected purposively using the "maximum variation" sampling strategy. One curriculum planner was selected from each of the three fields within the nursing course (adult, child, and mental health). Different curriculum planners were selected for the follow up interviews because they were involved in the changes that had been made regarding the use of e-portfolio for the "12/09 cohort".

Sample size

The ultimate goal of qualitative research is not to generalise the results to the study population, but to understand and provide a rich description of the investigated phenomenon through an extensive study of specific cases, which may be relatively few in number (Creswell, 2007;Polit and Beck, 2010). However, there is no fixed rule or formula for determining the sample size in qualitative research (Patton, 2002a). It is argued that determining the sample size in qualitative inquiry relies on the researcher's judgment as to whether the sample is too large or too small, taking into consideration the purpose of the study, the available

resources, and the available time (Sandelowski, 1995). This study sought to develop an in-depth understanding of the pedagogical value of the e-portfolio, hence the depth was more important than the breadth and the quality was more important than the quantity. With regard to this, (Morse, 2000) identified five factors researchers need to consider when determining the sample size. These factors in terms of their application to this study are shown in table 5.2.

Table 5.2: Factors to be considered when determining sample size

Factors	**Application in this study**
The scope of the study	- The study focused on the pedagogical value of the e-portfolio for nursing students and the challenges to its use. - Activity Theory was used as a theoretical framework
Nature of the topic	- This complex topic needed to be understood from different perspectives within a larger context.
Quality of data	- Rich data were needed to understand the case as a whole. - A variety of data collection methods were used (interviews, observation, and document analysis).
Study design	- Instrumental case study - Longitudinal (initial and follow up interviews)
The use of shadowed data	---------

The above table shows that the topic of study was complex, therefore a large amount of data needed to be collected using a variety of different methods at different time points. According to (Morse, 2000), the greater the amount data obtained per participant, the fewer the number of participants required (Morse, 2000). After considering these factors and reviewing previous studies on the same topic, 20 students,

12 tutors and 3 curriculum planners were initially sought. However, these numbers changed during the data collection to 14 students, 11 tutors and 3 curriculum planners because of data saturation. The redundancy of the information collected from the participants was an indicator of the sufficiency of the sample (Gay and Airasian, 2000).

5.3.5.4 The recruitment and selection procedures

Once ethical approval was granted and permission to conduct the study was received from the school, the recruitment process started in December 2012. All participants were recruited on a voluntary basis. No monetary incentive for participation was given to any of the participants. All the participants who expressed an interest in participation were given information sheets (Appendix B1) that contained a detailed explanation of the study, to help them decide whether they wanted to take part in the study. The total number of participants who actually participated in the research was 28: 14 students, 11 tutors, and 3 curriculum planners. The recruitment process for each category of participants is explained below.

Recruitment of students

Initially, an invitation email was sent to all the students of the 12/09 cohort to invite them to take part in this study. The email was sent to them via their Course/Module leader on the researcher's behalf, as specified by the ethics committee. Initially a small number students agreed to take part. A follow up email was sent to recruit more participants. In order to maximize the participation rate, another two recruitment strategies were used. First, some posters were displayed on

a few bulletin boards in the school, inviting the students to participate in the study. Second, invitation cards that included information about the research and also included the researcher's contact details were created. The researcher went to some of the drop-in sessions that were conducted by the school and distributed these cards to students, asking them to contact the researcher if they were interested in taking part the study. The students were promised a certificate of participation in the research at the end as an incentive. This recruitment process allowed me to recruit 14 students to take part in the study.

Recruitment of tutors

Initially, invitation cards were left for the tutors in their pigeon holes inviting them to participate in the study. After some time, only two tutors had replied and expressed their interest in participating in the study. A faculty member sent a follow up email, on the researcher's behalf, to eligible tutors, inviting and encouraging them to participate. This strategy worked very well and resulted in another 9 tutors agreeing to participate in the research, resulting in 11 tutors in total.

Recruitment of curriculum planners

Three curriculum planners were identified as key persons in the school who could provide rich information about the integration of the e-portfolio into the curriculum and also about the rules and policies that governed its use. Each curriculum planner represented a different nursing field, one was from the mental health nursing field, another was from the child nursing field, and the last one was from the adult nursing field. Once identified, an email was sent to each one

of them inviting them to take part in the study. All of them agreed to take part in the study and be interviewed.

5.3.5.5 Data collection procedures

In this case study, data were collected over 21 months starting in December 2012 and ending in August 2014 (figure 5.3). The data were collected through semi structured interviews, online observation of students learning activities in their e-portfolios and document analysis. A written informed consent (appendix B2) was obtained from all the participants who agreed to participate in the study on the day of the initial interviews.

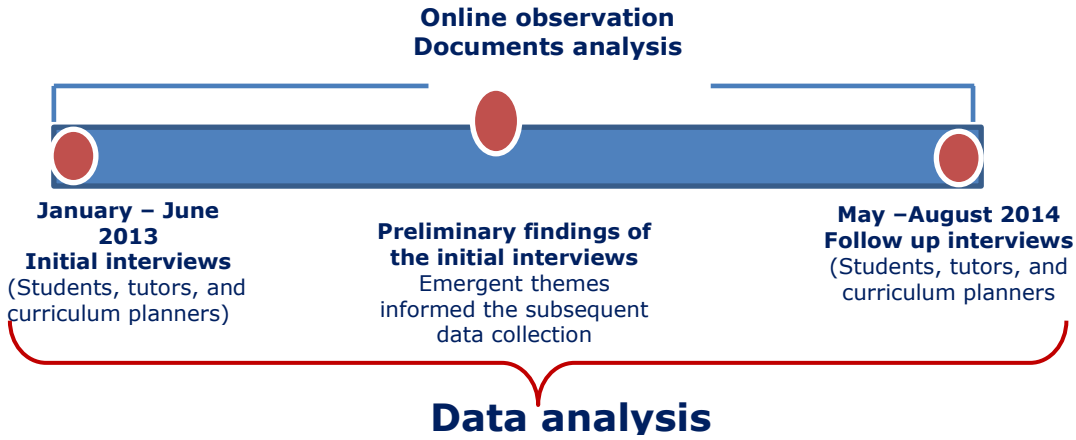


Figure 5.3 Timeline of data collection

Conducting semi structured interviews

A total of 52 interviews were conducted with the three categories of participants: students, tutors and curriculum planners. Table 5.3 shows the number of participants who took part in the initial and follow up interviews. Three students left the course after the initial interviews and one tutor was not available for the follow up interview. All the interviews were held in the meeting rooms at the School of Nursing. These rooms have been designed particularly for holding formal and informal meetings. All the participants were familiar with these rooms as they were used for holding

tutorial meetings. The interviews were scheduled with the participants by email, according to their availability. Each interview lasted from 40-80 minutes and they were done on a one to one basis. With the permission of the participants, the interviews were recorded using a digital voice recorder.

Table 5.3: The number of interviews conducted in the study

Participants	**Initial interviews**	**Follow up interviews**
Students	14	11
Tutors	11	10
Curriculum planners	3	3

The initial interviews were conducted 4-6 months after the students started using the e-portfolio. This allowed time for the participants to become familiar with the e-portfolio and explore how they could use it to carry out their learning activities. Each interview started with greeting the participant and introducing myself, followed by an explanation of the purpose of the research. After signing the consent form, each participant was asked to complete a short demographic questionnaire (see appendix C). The participants were assured that their privacy and confidentiality would be protected. They were also informed that they did not have to answer any question they did not want to answer and they could stop the interview at any time.

During the interview, most of the questions asked to the participants were open ended, in order to elicit more information from them. They were also probed for more detailed responses to explain any arising issues in more depth. They were encouraged to expand on their responses by using phrases as "Can you please tell more about this" or "can you please give me an example". In the students' interviews, with their permission, they were asked to show me their personal space on the e-portfolio in order to demonstrate what type of activities they carried out there. At the end of the interviews, they were asked whether they wanted to add anything and whether they would agree to be contacted again for the follow up interviews. After each interview, a reflection on how the interview went and any thoughts about emerging themes were written down.

The follow up interviews were conducted 16-18 month after the initial interviews. The participants (students and tutors) were contacted again by email to confirm their willingness to participate in these follow up interviews. The process of conducting these interviews was identical to the one used for the initial interviews.

Conducting the online observation

The primary focus of the online observation was to understand the mediational role of the e-portfolio in supporting the students in accomplishing their learning activities. In particular, the observation focused on the occurrence of any contradictions. With the students' permission, the researcher was given access to the workspaces (shared spaces) in their e-portfolios where they were submitting their work and interacting with their tutors. The online observation was conducted over approximately 12

months, starting after undertaking some preliminary analysis of the initial interviews. The preliminary findings of the interviews provided the basis for the researcher to identify what to observe.

The observation was conducted on a regular basis every month to record the students' actions and interactions within the e-portfolio (see appendix F). For instance, the researcher recorded whether the students were attaching evidence to the outcomes, giving and receiving feedback, sharing and submitting works to others, and using certain features on the e-portfolio. Screen shots of these actions were captured and saved in order to document and provide examples of their use in the e-portfolio. The observation was recorded in field notes for further analysis. The researcher was a silent observer and no interference was made during the observation period while students were using their e-portfolio. Being a complete observer enabled the researcher to observe more by "lurking" unseen in the virtual setting. Any issue or question that arose during this period was clarified later during the follow up interview.

Collecting documents

A number of documents were collected and analysed throughout the period of the study. These documents were obtained through different methods. For instance, during the interviews, the curriculum planners were asked about any documents that were relevant to the planning, implementation, and use of the e-portfolio in the school. Similarly, the students and tutors were asked whether they had received any written guides or instructions on how to use the e-portfolio. These documents were accessible through the participants themselves, through curriculum administrators

and through the Health E-Learning and Media (HELM) Team who were responsible for producing training materials for the students and the teaching staff on how to use the e-portfolio. A total of 11 documents were collected throughout the duration of the study. These documents included the curriculum planning document for the BSc nursing course, the student handbook, the student and tutor guides on using the e-portfolio system, the elective Webfolio handbook, the elective placement guide, the guide on submitting the modular learning portfolio and personal academic record in the e-portfolio, the guide on the IT facilities and e-resources for the Graduate Nursing Curriculum students, the Mentors newsletter, and the ongoing Achievement Record (OAR). Some of these documents were in an electronic form, while others were in a physical form. These documents were collected and analysed for the purpose of understanding what had been communicated to the students and tutors about the e-portfolio and also to identify the rules and policies that governed its use.

5.3.6 Data analysis

5.3.6.1 Data management and transformation (transcription)

All the data obtained through the interviews, observations and document analysis were stored in a password protected computer. All the filed notes, the paper documents collected for the analysis and the signed consent forms were physically stored in a locked cabinet in a secure place. Access to all these data was restricted to myself and my supervisors. Pseudonyms were used to label the transcripts and in any written documents related to the participants, to maintain anonymity and protect their identity.

The audio recorded interviews were transcribed verbatim. All of the initial interviews were transcribed by the researcher, but the follow up interviews were transcribed by a professional transcription company due to the time constraints. All the transcriptions were read carefully by the researcher, while listening to the audio files, in order to check the accuracy of information in the transcripts. The process of transcribing and reading the transcripts for accuracy helped the researcher to become more familiar with and immersed in the data. This was considered the first step in the data analysis because it allowed for ideas to emerge (Pope et al., 2000). NVivo software was used as a data management tool, when the initial coding took place. The rest of the analysis was done manually through using tables in Microsoft Word and post it notes.

5.3.6.2 Activity theory and critical realism as an analytical tool

The data analysis in this case study was guided by its underpinning theoretical framework, that is, Activity Theory. Using Activity Theory as an analytical tool allowed the researcher to conduct the analysis at two levels: individual and collective. The individual level focused on understanding how the students perceived and used the e-portfolio to carry out their learning activities and what opportunities it offered them to accomplish that. The collective level focused on analysing the sociocultural context (rules, community, and division of labour) in which the students and the e-portfolio were situated and identifying the challenges that emerged from that context and how they influenced/hindered the mediational role of the e-portfolio. However, the analysis was aimed at more than just producing a description of what was

said by the participants or observed by the researcher. Rather, drawing on the underpinning philosophy of this study, critical realism, the aim was to discover what deeper meanings might be interpreted, which could explain what had been said and observed. To achieve this level of depth, the process of data analysis involved uncovering the real, underlying mechanisms that supported how the e-portfolio mediated or shaped the way the students engaged and accomplished their learning activities, as well as how the structures of the sociocultural context influenced the way the students used and perceived the e-portfolio and created contradictions. Accordingly, there was a need to employ a data analysis approach which could help in both understanding the complexity of the phenomenon and revealing its underlying mechanisms. The study, therefore, employed a retroductive analytical approach.

5.3.6.3 Sequential induction: a retroductive analytical approach

Blaikie (2007) outlines four analytical strategies, deductive, inductive, abductive, and retroductive, and asserts that each strategy is appropriate for different research questions, research designs and philosophical positions. However, it is suggested that strategies can be used in combination, in a sequential manner for a more comprehensive analysis of a particular set of data. Therefore, a sequential inductive-retroductive approach was employed to analyse the data in this study (Blaikie, 2007;Meyer and Lunnay, 2013). The first stage of the data analysis used a general inductive strategy. The purpose of using this strategy was to allow the findings or themes to emerge from the raw data with no or little predetermined structure imposed by the researcher's

preconceptions (Thomas, 2006). The aim of this first stage was to make sense of the data based on the notion of "letting the data speak for itself". The second stage of data analysis used a retroductive strategy. The retroductive strategy was found to be highly compatible with the principles of Activity theory, critical realism and the constant comparative technique for data analysis (which will be explained in the next section). Rather than relying on a linear approach, a retroductive analysis adopts a spiral approach for studying phenomenona (Blaikie, 2007), by which researchers test their hypothetical model of the mechanisms to allow the ideas to emerge from the data until conclusions have been reached (Mills et al., 2009). This strategy is built on the premise that the mechanisms and structures that are responsible for producing a particular phenomenon are not directly observable and the participants are usually not aware of their presence (Blaikie, 2007). To obtain knowledge about these mechanisms researchers should go beyond what is said and observed by starting to ask fundamental questions and develop concepts about the phenomenon being investigated (Meyer and Lunnay, 2013). Therefore, an analysis using retroductive reasoning starts with a theoretical model or framework that hypothetically represents the mechanisms and structures that are assumed to generate the phenomenon and then uses it, as a guide, to identify and understand the real mechanisms (Blaikie, 2007). In this study, Activity Theory, as demonstrated in Engestrom's activity system triangle, was found to be an informative model in terms of identifying the real mechanisms and structures that underpinned both how the e-portfolio mediated the students learning activities, and, any challenges to its role as a mediator. Identifying these

mechanisms helped the researcher to understand how the e-portfolio mediated the students' learning activities and, under which conditions.

5.3.6.4 Constant comparative technique

There are a variety of techniques used to analyse data in qualitative research (Burnard et al., 2008). In the current study, the data were analysed using the constant comparative method. This technique can be defined as an iterative and intense process of constantly comparing one chunk of data (e.g. one statement, one code, one theme, one interview) with all other chunks, in order to find the differences and similarities. These data are then grouped together, based on their meaning, to form categories and capture the recurring patterns (Merriam, 2009). Therefore, the analysis used in this method is cyclical, that is, it requires the researcher to move back and forth between the data, codes, categories and themes (Ritchie and Lewis, 2003). In this study, such comparisons between the participants and across the data set, allowed the researcher to detect the maximum variations with regards to how the e-portfolio mediated the students learning activities. It also enabled the researcher to identify the areas of tension and the contradictions between the participants and their sociocultural context. Moving back and forth between the different data sources enabled the researcher to represent the multifaceted nature of this phenomenon and uncover its underlying, real mechanisms.

5.3.6.5 Data analysis procedures

This section describes the procedures employed in analysing the data from interviews, online observations and document analysis. The data analysis was carried out in two phases: the

inductive analysis phase and the retroductive analysis phase. However, the analysis was an iterative rather than linear process, as the data from different resources were collected at different times. As mentioned earlier, this study drew upon the Activity Theory framework and the constant comparative method for data analysis. It is worth mentioning that the Activity Theory framework was not used as an analytical tool in the first phase of the analysis because the aim in this phase was to be flexible and open to new ideas or patterns that might have emerged from the data, rather than focusing only on the data that fitted well with the components of the Activity Theory framework. On the other hand, the Constant Comparative method was used throughout the two phases of data analysis. This method involves three interdependent coding stages: open coding, axial coding, and selective coding (Strauss and Corbin, 1990). Since the aim of the present study was not to develop a new theory, only open coding (identifying major categories) and axial coding (making connections between categories) were used to open up the data for further investigation through the use of the Activity Theory framework. The following section describes the phases of data analysis in greater detail.

Phase 1: Inductive analysis: open coding

In the first phase of data analysis, open coding was employed to identify the main categories. It involved breaking down the data into distinct pieces, then examining them closely, and comparing them to each other in order to identify the connections, similarities and differences, and to develop categories. These pieces were named with labels that captured the meaning of what was being said in the text (Coleman and O'Connor, 2007;de Villiers and van der Merwe,

2011;Strauss and Corbin, 1998). The open coding started with initial interviews, followed by the document analysis, observation notes and the follow up interviews.

Initial Interviews

Open coding was done simultaneously with the collection of interview data. After the first couple of interviews, a list of initial codes emerged. This list was then used to code the subsequent interviews and then, as the list grew, the data collection continued. Each interview transcript was read several times in order to search for meanings, issues, and possible patterns. Using the NVivo software, codes were assigned to phrases, sentences, or paragraphs, depending on the content in each transcript. This process started to generate hundreds of codes, many of which were similar, but were given different names. Therefore, a refinement of these codes was required as early as possible. This refinement was accomplished through the use of the constant comparative method where the coded sections were compared and contrasted with the other data sections for similarities and differences. These comparisons were made within the same interview, between the interviews within the same group of participants, and across the interviews from different groups of participants. As a result of this process of constant comparisons, the codes were refined, some renamed, some merged, and others eliminated as they were found to be irrelevant. Then, the relevant and most frequent codes were grouped together, based on their similarities and differences, and broader categories were formed, representing particular concepts identified in the data (see appendix D for an example of the first codes clustering).

The process of constant comparison analysis of the data units enabled the researcher to continuously compare new data units or incidents to the existing codes, subcategories and categories under each of the aforementioned themes. This process helped to identify and update the properties and characteristics of each theme for the purpose of determining the inclusion and exclusion of different categories into these themes (Merriam, 2009;Ritchie et al., 2013). In conclusion, the result of the open coding of the initial interviews was a list of the codes, categories and themes that had been developed at this stage. This list was used to guide the subsequent data collection and analysis in the observation and document analysis as will be explained in the following section.

Online observation

The findings from the online observations were recorded in the observation field notes. These notes were read by the researcher several times, in order to search for patterns and contradictory, or confirmatory incidents in relation to the emergent themes and categories. The data in the notes were coded using the established list of codes and categories developed from the analysis of the initial interviews. Using the same codes allowed the researcher to compare and contrast what was being observed and what was being said by the participants in the interviews, hence, identifying any contradictions. When the observation data did not seem to fit with the existing codes, these codes were revised and new codes were added as needed. The analysis of the online observation data was done over 12 months, which was the period of online observation. As further observation data were collected, they were constantly compared to the initial

interview data and the previously collected observation data for similarities and differences. This constant comparison was believed to "maximize the potential for variety in concepts (or in their forms of expression) early in the process" (Bazeley and Jackson, 2013, P.70).

Document analysis

The document analysis started after the preliminary analysis of the initial interviews and was done simultaneously with the analysis of online observation. The collected documents were read by the researcher several times, in order to become familiar with and gain a holistic sense of their content. The aim of this analysis was to understand the sociocultural context in which the four e-portfolio-mediated activities, identified as the overarching themes from the initial interviews, were carried out. More specifically, the analysis focused on the identification of the rules and norms that governed the use of e-portfolio in terms of accomplishing these activities and the role and responsibilities of those who were involved in these activities. Similar to the analysis of observation data, the contents of the documents were coded using the list of codes and categories that was developed previously, during the initial interviews. The coding process involved comparing the data fragments in these the documents to the data fragments in the other two data sets, to verify the themes that emerged from the initial interviews and observations and to identify any differences between what had been expected and what actually occurred. When any part of the documents did not fit into the pre-existing codes, new codes were created as needed and integrated into the existing categories.

Follow up interviews

The same coding procedures were applied for the analysis of the follow up interviews. The extensive code list that was developed from the analysis of the other data sets was also used to code the transcripts of the follow up interviews. Throughout the analysis of the follow up interviews, the new data were constantly compared to the earlier data. The new data revealed further information, so, as a result, the existing codes and categories were refined, expanded and enriched, new codes and categories were developed, the potential arching themes developed from the previous data sets were verified.

The open coding continued until a saturation of data occurred, which was when no further data could be coded. After all the data from the different data sets had been coded, the developed codes were then grouped and integrated under various categories and subcategories, based on their similarities and differences.

Phase 2: Retroductive analysis: axial coding and Activity Theory framework

In the second phase, the analysis moved to a higher level, with a search for the relationships and connections between the categories identified in the open coding stage and their synthesis into major themes, in order to a form more coherent, conceptual sense of the phenomenon under investigation. Although the open and axial coding had different functions in the data analysis, they were not entirely sequential. They occurred almost simultaneously, as it was impossible for the researcher to code the data fragments without considering their possible connection to other data fragments. Therefore, the researcher moved between open and axial coding as necessary. Axial coding is described by

Strauss and Corbin (1990) as "a set of procedures whereby data are put back together in new ways after open coding, by making connections between categories. This is done by utilizing a coding paradigm involving conditions, context, action/interactional strategies and consequences" (Strauss and Corbin, 1990, P.96). They propose that connections between categories are not always evident and that using a well-defined coding paradigm can make these connections more explicit by allowing analysts to ask questions of the data and draw systematic comparisons between categories. In the current study, Activity Theory framework functioned as a coding paradigm that helped the researcher to assemble the fractured categories and connect them in a meaningful way, as will be explained in the following section.

Application of Activity Theory in analysis:

1. Identify the key activities

As explained in chapter three, in Activity Theory, the basic unit of analysis is human activity, which is goal oriented and tool(s) mediated. Therefore, the first step in using the Activity Theory framework for analysing the data was to identify the key activities that were undertaken by the students with the support of the e-portfolio as a mediating tool. To identify the key activities in this study, the researcher read and re-read the categories identified in the open coding stage and compared them across all the data sets to search for any patterns and recurring themes. This process revealed that these categories could be classified into four main learning activities, in which the e-portfolio was used as a mediation tool. These four activities formed the overarching themes through which the mediation role of the e-portfolio was explained. Thus, they have become the focus of the analysis

and the interpretation in the following chapters. These activities (themes) were:

- Recording and storing information and activities. (chapter 6)
- Evidencing the achievement of learning outcomes. (chapter 7)
- Reflection on experience. (chapter 8)
- Sharing work with others. (chapter 9)

2. Operationalize the components of the key activities

Analysing the mediation role of the e-portfolio in the aforementioned activities required the researcher to, first, describe the seven components that constituted each activity (subjects, object, expected outcomes, tools, community, rules, and division of labour). In this step, the researcher had to revise the categories that were grouped under each activity and re-construct them in a way that could best describe these components. To guide this process, the following questions from AODM's Eight-Step-Model developed by Mwanza (2002) were used to find the relevant categories (see figure 5.4):

AODM's Eight-Step-Model (Mwanza, 2002)

The Eight-Step-Model		
Identify the: -		Question to Ask
Step 1	Activity of interest	What sort of activity am I interested in?
Step 2	Object-ive	Why is the activity taking place?
Step 3	Subjects	Who is involved in carrying out this activity?
Step 4	Tools	By what means are the subjects performing this activity?
Step 5	Rules & Regulations	Are there any cultural norms, rules or regulations governing the performance of this activity?
Step 6	Division of labour	Who is responsible for what, when carrying out this activity and how are the roles organised?
Step 7	Community	What is the environment in which activity is carried out?
Step 8	Outcome	What is the desired Outcome from carrying out this activity?

Figure 5.4: AODM's Eight-Step-Model by (Mwanza, 2002)

Next, the researcher drafted an activity system model for each activity using Engestrom's triangle and then mapped the relevant categories to the components that they best described (see appendix E). Describing these components was an essential step because it provided comprehensive information about the context in which these activities were situated. It also set the foundations for the next step, which included the analysis of the challenges and any contradictions that resulted from the imbalance between these components.

3. Analyse the tool mediation and contradictions

After describing the components of the four activity systems, the next step was to analyse the interactions and relationships between these components, in order to understand the mediations and contradictions. Analysis of these interactions and contradictions can be complex. To reduce this complexity, an activity system can be broken down into smaller manageable sub-triangles or sub-activity triangles that make up the main activity system (Mwanza-Simwami, 2011). The Activity Theory framework is a flexible analytical tool, as it enables researchers to focus on different interactions or sub-activity triangles for different purposes, thus analysing their data from various perspectives, depending on their research aims and interests (Jacko, 2012). Based on the aims of the current study, an activity system analysis was used to focus on the below interactions or sub-activity triangles in the four activities. Table 5.4 provides a summary of the relationship between the selected sub-activity triangles and the research aims. The codes and categories identified under each activity were revised and assigned to the relevant sub-activity triangles based on their ability to explain particular interactions within these sub-

triangles. The following are the selected sub-triangles or interactions selected in the current study:

- **Subject-tool-object**: an analysis of the interactions between the components in this sub-activity triangle provided a valuable insight into the tool mediation on an individual level. The guiding questions for the analysis were: how did the e-portfolio (tool) help the students (subjects) to accomplish the activity of interest (storing, evidencing, reflection, sharing) and achieve their object? And, what challenges did the students experience that were related to the e-portfolio itself as a platform? The results from this analysis helped the researcher to address the aims of this research, concerning the pedagogical value of the e-portfolio and the challenges of its role.

- **Community-tool–object**: analysing the interactions between the components in this sub-activity triangle allowed for an understanding of the tool mediation on a collective level. The guiding questions for this analysis were: how did the e-portfolio (tool) help the tutors (community) to support their students in carrying out the activity of interest (storing, evidencing, reflection, sharing) and achieve their objects? And, what challenges did the tutors experience, that were related to the e-portfolio itself as platform? Similar to the first sub-triangle, the results from the analysis of this sub-triangle helped to address the aims of this research concerning the pedagogical value of the e-portfolio and the challenges to its role.

- **Students/community–rules-object** and **Students/community–division of labour-object**: an

analysis of the interactions between the components in these sub-activity triangles enabled the researcher to identify how the use of e-portfolio (tool) was influenced by the components of the activity system. It helped to identify the challenges that resulted from the contradictions in the rules and division of labour components. The guiding questions for exploring the contradictions in these sub-triangles were: how did the rules and division of labour affect the way the students used the e-portfolio to accomplish the activities of interest and achieve their objects? And, how did the rules and division of labour affect the way the tutors used the e-portfolio to support the students in their accomplishment of the activities of interest? The results of this analysis were related to the second aim of the research, concerning the challenges and contradictions that affected the role of the e-portfolio in mediating the activities under investigation.

Table 5.4: the relationship between the selected sub-activity triangles and the research aims.

Sub-triangle	**Aim 1** Pedagogical value of e-portfolio	**Aim 2** Challenges and contradictions
Subject-tool-object	✓	✓
Community-tool–object	✓	✓
Students/community–rules-object		✓
Students/community–division of labour-object		✓

5.3.7 Trustworthiness of the qualitative research

In qualitative research, the term trustworthiness refers to "methodological soundness and adequacy" (Holloway and

Wheeler, 2013, p.302). Trustworthiness, in a qualitative study, is essential for judging its worth. Lincoln and Guba (1985) suggest four criteria for developing and judging the trustworthiness of a qualitative research study: credibility, transferability, dependability and confirmability. They also developed some suggestive strategies to be applied by qualitative researchers, to allow them to meet these criteria and attain trustworthiness. This section discusses the strategies applied by the researcher throughout the research process of this study to meet the aforementioned criteria and ensure trustworthiness.

5.3.7.1 Credibility

Credibility refers to having confidence in the truthfulness of the research data and their interpretation. It concerns whether the research findings accurately represent and interpret the participants' construction of their reality (Lincoln and Guba, 1985;Holloway and Wheeler, 2013;Polit and Beck, 2013). To produce credible findings, the following strategies, suggested by Lincoln and Guba (1985) and Merriam (2009), were employed in this study:

- **Triangulation:** triangulation means investigating a topic, issue, or phenomenon from more than one perspective through the use of multiple methods or sources (Merriam, 2009;Holloway and Wheeler, 2013). It is a well-known method for developing a comprehensive picture of the phenomenon under investigation, as well as testing the validity of data by corroborating the evidence from different sources or methods. Denzin (1978) identifies four types of triangulation: method, data source, investigator and theory triangulation. The present study employed both data source and methodological triangulation, with data

obtained from multiple sources: students, tutors and curriculum planners and the use of multiple data collection methods: interviews, online observation and document analysis to answer the research question. This triangulation allowed for better understanding and interpretation of the data from different angles and using different voices.

- **Prolonged engagement and persistent observation:** According to Glesne (1999) " time is a major factor in the acquisition of trustworthy data... When a large amount of time is spent with your research participants, they less readily feign behavior or feel the need to do so; moreover, they are more likely to be frank and comprehensive about what they tell you" (Glesne, 1999, p.151). As mentioned earlier in this chapter, the data were collected over a 21 month period. Two rounds of interviews were conducted at different stages with each participant. Online observation of the students learning activities was conducted over approximately 12 months. This prolonged engagment and observation provided the opportunity to the researcher of understanding the context and the site in which the participants were situated and the e-portfolio was used. This prolonged engagement also helped in building a rapport with the participants so that they unltimately started to reveal more insightful information about their experience with the e-portfolio. This strategy helped in obtaining and producing more credible information as well as providing a thick description of the case under investigation .
- **Member checks:** member checks is the process of testing the data and the researcher's interpretations of them with the participants from whom the data were originally

collected. It is regarded as an essential strategy that should be used by every qualitative researcher to establish credibility (Lincoln and Guba, 1985;Merriam, 2009). The main purpose of doing member checks is to eliminate any misunderstanding or bias in the data analysis and interpretation by seeking the participants' feedback on whether the researcher' interpretation and reconstruction of data is a true representation of their original point of view (Merriam, 2009;Anney, 2014). In the present study, member checks took place in the second interview where the preliminary interpretations of the first interviews and online observation data were orally discussed with the participants. The reason that these preliminary interpretations were not sent in a written format to the students and tutors was because they had a busy schedule. Thus, asking them to read the interpretations and write their comments would further add to their workload. These checks were helpful in adding clarity to the researches' interpretation and they also triggered new questions for the second interviews.

- **Peer review/debriefing:** this strategy involves exposing oneself to questioning by peers who are experienced either in the phenomenon under investigation, qualitative methodology or both for the purpose of discussing issues, clarifying meanings, justifying interpretations and detecting biases (Holloway and Wheeler, 2013;Lincoln and Guba, 1985). In the current study, this peer review strategy involved meeting with research supervisors, on a regular basis, throughout the process of research. These meetings involved discussions about different aspects of the research process, such as:

- The selection of the research paradigm and research method
- The approaches to data collection and difficulties encountered during field work
- The sufficiency of data gathered to answer the research questions
- The data analysis approach, coding process and the emerging themes and categories.
- The consistency of the researcher's interpretation of the findings from the data collected
- The possible biases in the findings and their interpretation.

- **Reflexivity:** this refers to the process by which the researcher critically reflects on themself as a researcher, in order to acknowledge any personal assumptions, biases, feelings and actions that may have an influence on the research process (Merriam, 2009;Polit and Beck, 2013). Adopting a critical self-reflection approach may help researchers to recognise their own biases, when making decisions regarding data collection, analysis and interpretation. Doing so will enhance the credibility, dependability, confirmability and transferability of the study (Holloway and Wheeler, 2013;Anney, 2014). In the current study, a research journal was used to record ideas, feeling, problems, and issues related to every stage in the research process. This reflective journal was very useful for reference during the write up of the methodology, findings and interpretation chapters.

5.3.7.2 Dependability

Dependability and confirmability are interrelated. Dependability is the equivalent of reliability in quantitative

research (Lincoln and Guba, 1985). Findings are dependable if they are accurate and consistent with the data collected. The readers of the research need to be able to evaluate the adequacy of the data analysis and judge whether the findings and interpretations are adequately supported by the data collected from participants (Patton, 2014;Holloway and Wheeler, 2013). Confirmability is the equivalent of the term objectivity. It refers to the degree to which the results, interpretations and conclusions of the study are derived from the data rather than from the researcher's own personal beliefs, judgments and assumptions. Lincoln and Guba (1985) and Merriam (2009) suggest several strategies that can be used to increase the dependability and conformability, such as peer review, triangulation, reflexivity and the development of an audit trail. The first three strategies have been addressed in the previous section under credibility. An audit trail is a record that describes in detail the research process and all the decisions made by the researcher throughout the inquiry, such as how the data were collected and the themes were identified. To ensure the dependability of the findings of this study, a detailed audit trail was developed. This trail can be found in the methodology chapter (and relevant appendices) where the research process was explained in a great detail. Moreover, due to the space limitation in the thesis, a folder containing such data as the audio recorded interviews, transcripts, observation and field notes, reflective notes, screen shots of the students' online activities on the e-portfolio, drafts of the data analysis and NVivo reports was kept separately and may be provided upon request.

In addition, a double or multiple coding strategy was employed as an inter-rater reliability technique to eliminate subjectivity. Multiple coding involves "the cross checking of coding strategies and interpretation of data by independent researchers" (Barbour, 2001, p.116). As shown in table 5.5, some segments of the data, alongside the emergent coding framework, were shared with another researcher, who was not involved in the current study and had a different background. This researcher was asked to code these segments using the code framework. The result of this double coding showed a substantial agreement between the two coders.

Table 5.5: An example of double coding strategy

No	**Quotes**	**Researcher**	**Second coder**	**Matching**
1	*I like that I can access it from anywhere, you don't just have to have that from your computer you can just log on anywhere, anytime*	Easy access	Easily accessible	Matched
2	*Everything I put I tag it, unit A, unit B, or unit C. The reason why I'm doing that is I don't want to just taking my time to look for something, I like when it is organized*	Content organization	Organizing work	Matched
3	*It's [e-portfolio] good because I can see what I haven't done, maybe I thought I've done it but*		Track progress	Matched

	I haven't, which is good…	Monitor progress and achievement		
4	*I can put a range of different kind of evidence on there [the e-portfolio]. That's really good, I can upload many different files, I can scan things and upload them*	Use of multimedia	Variety of evidence	Not matched
5	*I think what I've found quiet easy is that I can look at what I've uploaded and then I can kind of go and edit them, view them and reflect back on them. That's quite easy*	Encourages retrospective reflection	Easy reflection and editing	Not matched
6	*When you are doing reflection, there is a template already for reflection which makes it easy for me. So, I just go on the template, because there is "what, so what, now what?" [one of the reflection templates] So with that it helps me to construct what I have to reflect on*	Templates facilitate reflection	Reflection is easier with templates	Matched
7	*You can put pictures and make it [Webfolio] more visual because it was mostly marked on how you reflect and evaluate what you've done. I think that is a much handier format than a*	Visual reflection	Flexible format for reflection	Not matched

	paper one for that kind of reflection.			
8	*I think you should just be able to reflect on how you want on your own style because people write differently, people feel and see things differently*	Preference for unstructured reflection	Free style reflection	Matched
9	*It's a nice that I can choose what I submit and don't submit. So, it's nice it kind of you've got a control over what you wish to submit and what you feel is most appropriate to submit,*	Control the content to be shared	Control over sharing	Matched
10	*I think the electronic portfolio for me enables me to give a fairly instant feedback to the students so they don't have to wait for the tutorial to be available to them*	Immediate feedback	Provision of instant feedback	Matched

5.3.7.3 Transferability

Transferability is an alternative to the term generalisability. It refers to the degree to which the findings of a qualitative study can be transferred to other contexts or groups of participants (Lincoln and Guba, 1985;Holloway and Wheeler, 2013). However, case studies have been criticised for limiting the researcher's ability to generalise from their findings (Yin, 2009;Stake, 1995). Yin (2009) argues that case studies "are generalisable to theoretical propositions and not to

populations or universes" (p.15). He adds that the aim of case studies is to contribute toward generalising or expanding theories (analytic generalisation), rather than focusing on numbers and frequencies (statistical generalisation). In a similar vein, Stake (1995) introduced the concept of "naturalistic generalization", which is described as a process where readers engage and reflect on the findings of a case study and recognise similarities that resonate with, and fall naturally, into their own experience. Merriam (2009) refers to this type of generalization as "Reader or user generalisability" because it is the user who reads the case study, evaluates the findings in the light of their own experience and chooses whether or not to apply them to their own context. However, it is the researcher's responsibility to provide a rich and detailed description of the content and context of the case study to enable readers to compare these descriptions with their situation and then draw out their own generalisations (Stake, 1995;Merriam, 2009). Thus, it can be reasonably assumed that naturalistic generalization is one way of transferring findings from one context to another in case study research.

In the current study, thick description was employed as a strategy to enhance the transferability of the findings. The use of activity theory, multiple data collection methods and multiple data sources allowed the researcher to provide a rich and thorough description of the context, setting, participants, experiences and activities observed during the research. It was hoped that these descriptions would be sufficient to assist potential readers in evaluating the findings and identifying any contextual similarities with their own situations.

5.3.8 Ethical considerations

Informed consent

Informed consent is considered a vital component of ethical educational research (American Educational Research Association (AMERA), 2011;Brooks et al., 2014;Johnson and Christensen, 2016). The British Educational Research Association (BERA) (2011) ethical guidelines state that "researchers must take the steps necessary to ensure that all participants in the research understand the process in which they are to be engaged" (p.5). In keeping with these guidelines, written consent was obtained from all the participants, after they were fully informed both verbally (through discussion) and in writing (through the information sheet) about the following:

- The purpose of the study.
- The nature of questions which they were likely to be asked.
- The nature of the online observation of their activities on the e-portfolio (for students).
- That their participation was voluntary and they were free to withdraw at any time during the study without giving any reason.
- That they had the right to ask questions and discuss any aspect of the study with the researcher at any time during the study.
- That their information would be kept confidential in a secure place.
- That their privacy and anonymity would be ensured. Their real identities would not be attached to any data, during or after the study.

The participants were given enough time to consider their participation and have the opportunity to ask questions and

clarify things with the researcher before signing the consent form.

Confidentiality and anonymity

Confidentiality and anonymity of participants' data must be protected. It is the duty of education researchers to protect the privacy and identity of the participants and ensure that they do not disclose any identifiable information about them (Scottish Educational Research Association (SERA), 2005;British Educational Research Association (BERA), 2011;American Educational Research Association (AMERA), 2011). Therefore, a number of measures were applied by the researcher in the current study to prevent any violation of the participants' confidentiality and anonymity, for example:

- Pseudonyms were used in the transcripts and in any written form of the research and their real names were not attached to any data.
- All the interview recording, transcripts and participants' contact details were physically stored in a secure place to limit any unauthorized access.
- All electronic documents were stored in a password protected computer.
- All the information collected through the online observation of the students activities on their e-portfolio was kept confidential
- The identity of the school and university in which the research was conducted will not be revealed so that participants' identity will not be recognized.

Power issues

During interviews participants may judge the interviewer and view him/her as working from a position of power. They may

in turn define themselves and their position as vulnerable and powerless and view the interview as a threatening situation (Brenner, 2006;Vähäsantanen and Saarinen, 2013). In reaction that, they may withhold information or change the direction of the interview by talking about something other than what was asked for as a way of neutralizing such power (Kvale, 2006;Brinkman and Kvale, 2015). Unequal power relations during interviews is often attributed to the differences between the participants and the interviewer which may cause anxiety and discomfort (Vähäsantanen and Saarinen, 2013;Karnieli-Miller et al., 2009). In the current study, the age, educational background, and professional position of the interviewer may have created power imbalance between the interviewer and the students during the interview. To address this issue, the interviewer applied some strategies to reduce any power issue, for example, the researcher:

- Established a good rapport with the students by being clear, polite, friendly, respectful, and personable.
- Shared her personal and professional background and her institutional affiliation as a way of self-disclosure at the start of the interview.
- Provided an opportunity to the students to ask questions and seek clarification at any point during the interview
- Chose the location of the interviews to be familiar to the students in order to put them at ease and make them feel more comfortable and empowered.

5.4 Summary

The chapter presented a detailed description the methodological approach that was used in the study. It provided a great detail of the underpinning philosophical

assumptions that informed the selection of the research design is also presented. It presented the research design, the participants and setting, the methods of research and the procedures utilised for data collection, followed by the data analysis procedure and ended with a summary of the ethical issues which arose during the study.

CHAPTER SIX: DESCRIPTION OF THE SOCIOCULTURAL CONTEXT

6.1 Introduction

The findings of the study will be presented in five chapters as follows:

1- Chapter 6 presents the description of the sociocultural context in which e-portfolio was used.
2- Chapter 7 presents Activity 1: recording and storing work items and evidence
3- Chapter 8 presents Activity 2: evidencing the achievement of learning outcomes
4- Chapter 9 presents Activity 3: reflection on experience
5- Chapter 10 presents Activity 4: Sharing work with others

In this chapter, the sociocultural context in which the e-portfolio was used as a mediating tool for the four learning activities (recording, evidencing, reflection, sharing) is described. The context is analysed and presented according to the components of activity system: subject, object, outcomes, community, tool, rules and division of labour. The description of these components prepares the ground for the next four chapters, in which information about the rules and division of labour will be used to identify any contradictions within the other four learning activities.

6.2 The components of activity system

6.2.1 Subject

The findings from the students' demographic questionnaire (see appendix G) show that the subjects comprised 14 first-year, full time students who were enrolled in the Adult and Mental Health Nursing courses. They were a very diverse

group in terms of their age, background, ICT skills, and culture. For example, their age ranged from early twenties to mid-thirties. They were a mix of home and international students, had different educational backgrounds and held different qualifications such as 'A' levels, Diplomas, Bachelor's and master degrees. Their ICT skills ranged from average to high.

6.2.2 Objects and outcomes

The data analysis revealed that e-portfolio was used as a mediating tool for carrying out the four activities:

- Recording and storing work items and evidence;
- Evidencing the achievement of learning outcomes;
- Reflection on experience;
- Sharing work with others.

These activities will be described, in detail, in the next four chapter of the thesis.

6.2.3 *Outcome(s)*

The desired outcome of the e-portfolio was that the students would ultimately become independent and self-directed in their learning. The underpinning philosophy of the course placed the students at the centre of the educational process, whereas the tutors and mentors were seen as facilitators. The students were viewed as adult learners who were responsible for their own learning.

> ***Curriculum planners' interviews:***
>
> *Because we have this philosophy in the course of "student led learning" so that students take responsibility for their own learning and it's not about us filling of empty vessels. It's more about the student going out there hungry looking for*

> *learning that meets the outcomes that they've given and then demonstrating that they're doing that, so that the e-portfolio has been setup so that they can do that.*
>
> *(Curriculum planner 2, initial interviews)*
>
> *The actual portfolio itself is really essential for nursing I think. I think it's partly about how can students recognize what they are learning and how they are learning and how that's contributing to their practice.*
>
> (Curriculum planner 1, initial interviews)

6.2.4 Community

The community included those whose role was to support the students in the process of developing their e-portfolio. This included tutors, curriculum planners, the Health E-Learning and Media team (HELM), and other students on the course. Below is a brief description of each:

Tutors: The 11 tutors who participated in this study were fairly diverse. Their teaching experience ranged from 4 to 17 years. The majority of them were from the Adult Nursing field. Their IT skills ranged from average to highly skilled. All of them had previous experience working with paper portfolios but only few had an experience working with e-portfolios. Their roles and responsibilities with regard to supporting the students in developing their e-portfolios will be discussed in the "division of labour" section.

Curriculum planners: The study involved 6 academic staff from the Adult, Child, Mental Health Nursing fields. They were directly involved in the process of planning, implementing the

e-portfolio within the school, embedding it in the curriculum and setting up the rules to govern its use. Their responsibilities involved evaluating the use of e-portfolio in the school, identifying any issues with its use and applying the changes accordingly.

The Health E-Learning and Media (HELM) team: This team included a group of both academics and learning technologists who played an important role in supporting the students and tutors in their use of the e-portfolio by providing them with the necessary technical and pedagogical support. They were responsible for running training and drop-in sessions for the students and tutors on the use of the e-portfolio, developing written guides and other resources on how to use the e-portfolio system and providing consultations on a one on one basis to solve any technical issues related to the e-portfolio.

6.2.5 Tool

The tool of interest in this study was the e-portfolio. The School of Health Sciences has invested in an e-portfolio system called "PebblePad". PebblePad is a personal learning space or platform that includes a variety of inbuilt tools and functions that are designed to support students' learning. The document analysis revealed that this e-portfolio system offered the students several affordances to support their learning. The following excerpts from the students' guide show some of these affordances.

> ***Documents analysis:***
>
> *PebblePad is an online learning tool and electronic portfolio which provides you with a new way of recording your learning, achievements, attributes or talents online.*

> *PebblePad provides templates to support you in recording, gathering, organizing, and presenting a wide range of resources in a variety of interesting and personalized ways to demonstrate your diverse learning experiences- your studies, work, volunteering, hobbies and interests".*
>
> *You can upload a wide range of files types into Pebble+ including documents, presentations, images, and videos.*
>
> *One of the most useful things about PebblePad is the ability to share resources with others, in order to work collaboratively or provide/gain feedback.*
>
> *(Getting started-student guide)*

The e-portfolio was introduced gradually to the students and tutors. In the first year, a number of training and drop-in sessions were organised for them at the beginning of the year to familiarise them with the system. The initial training included an introduction to the basic tools and functions of the e-portfolio system. Written guides were provided, explaining what the system could do for them and how they could use it, and they were encouraged to explore the system more and experiment with its templates and tools. Throughout the year, they were encouraged to use the e-portfolio to record and reflect on their learning, share their work with others and ask for feedback. So, it can be seen that the e-portfolio was used mainly as a personal learning record and formative assessment tool.

In the second year, the e-portfolio was used for both formative and summative assessment. As the students became more confident and comfortable with using the e-portfolio, an assessment task was added, the elective placement Webfolio. The students were required to use the e-portfolio system to develop a Webfolio of their experience during their elective placements and submit it to the assessment space within the e-portfolio system for formal assessment. This task will be explained in more details in the "rules" section.

6.2.6 Rules and norms

The data analysis revealed that the use of e-portfolio was governed by various rules. These rules regulated how the students and tutors used the e-portfolio. These rules are described below:

6.2.6.1 Use the e-portfolio to complete the blended learning activities

Pre-planned, blended learning activities were designed by the module leaders for each lecture. After each lecture, the students were required to complete the related activities and record them in their e-portfolio before attending the facilitated group session organised to discuss these activities. The student could share these activities with their facilitator on the e-portfolio before the session, if they wanted.

> ***Curriculum planners' interviews:***
>
> *There was a clear decision made that PebblePad would become an essential component, that the blended learning would be associated with PebblePad.*
>
> *(Curriculum planner 4, follow up interviews)*

The following excerpt from the instructions provided to the students on Moodle gives an example of an activity the students had to record on their e-portfolio.

> ***Document analysis:***
>
> *You must complete the activities within this learning topic and then undertake the associated recording activity [on PebblePad]. Read the four scenarios, which can also be found by clicking on the following scenarios link and completing the task set out for you in PebblePad. You are required to complete these reflections as evidence of completion of this mandatory aspect of your learning.*
>
> *(Instructions under one of the lectured on Moodle)*

6.2.6.2 No particular reflection framework is required

Although the students were encouraged to use a reflection framework or template, either generic or bespoke within the e-portfolio system, to give a structure their reflection, they did not have to use a particular example. It was up to them to decide, based on their needs. These were unanimously agreed-upon rules, as demonstrated in the excerpts below.

> **Tutors' interviews:**
>
> *We encourage them to use a reflective model, you know, they could use Gibbs' or Johns' or whatever, but sometimes they do and sometimes they don't. I think it's a useful way of structuring it*
>
> *(Tutor 8, follow up interviews)*

Students' interviews:

Obviously you can choose whatever reflection cycle you want but I think the idea is that they want you to use a cycle [reflection model] to make it easier to work out. Obviously the cycles have been tested and stuff like that so rather than you just writing your feelings... I think it probably makes it easier and then it makes it easier for whoever is reading it work out that you've followed the cycle.

(Student 14-A, follow up interviews)

You can use whatever you want. You don't have to use anything at all, it just makes it look nice.

(Student 6-A, follow up interviews)

You can obviously choose what tool you want to do that but you've just got to write a reflection.

(Student 4-MH, follow up interviews)

However, if a piece of reflective writing was an assessed assignment, the student might be asked to use a model of their own choice to structure their reflection.

Tutors' interviews:

Sometimes we would require a model in an assessed piece of work. In my communication skills module they have to use a reflective model in the first assignment, so it doesn't matter which one they use but they can use a model…So our normal policy, I think, is "we would like models or frameworks but you choose which models or frameworks you work from".

(Tutor 4, follow up interviews)

6.2.6.3 Sharing is optional, except for mandatory learning packages

The underpinning philosophy of the course viewed the students as adult learners who were able to take control of, and make autonomous decisions regarding their learning. Their e-portfolio was their own personal space, thus, they had the ability to decide whether or not to share their work with others.

> ***Curriculum planners' interviews:***
>
> *This is something we've told them that nobody can see it [e-portfolio] unless you give them permission to see it. Not everybody can see everything that's on PebblePad, which is because it's the student's own collection of assets, and the students let whoever they decide to share with, to share with them. So it's personal to the student.*
>
> *(Curriculum planner 5, follow up interviews)*

They only had to share some pieces of work with their academic staff as evidence of completing the mandatory learning tasks.

> ***Curriculum planners' interviews:***
>
> *It's [sharing] optional. It's up to them because it is their learning. But, there are certain things that they have to share. Some of the mandatory learning packages are shared automatically for them to get feedback on it. It automatically goes into their own store, so they can then use it as evidence within their PebblePad for their learning and share it with their personal tutors, or with facilitators. (Curriculum planner 5, follow up interviews)*

6.2.6.4 Complete risk assessment questionnaire and elective plan

The students were required to complete two important documents within their e-portfolio: the elective plan and the risk assessment questionnaire, before attending their four week elective placement. Completion of these documents was compulsory for all students, whether they were planning a local, national or international placement.

> **Tutors' interviews:**
>
> *In Unit B7204, the personal and professional effectiveness for nursing care unit, the students undertake an elective placement and the PebblePad has been used for their elective placement. So they have to undertake an elective plan, and then they have to do a risk assessment, all of it via PebblePad.*
>
> *(Tutor 1, follow up interviews)*

Neither document was graded, but they both had to be successfully and satisfactorily completed by the students, before going on placement. They had to share them with their facilitators on the e-portfolio for feedback, until they were approved.

> ***Document analysis:***
>
> *You submitted this [elective planning] for formative feedback to your facilitator earlier in the academic year. You are required to submit your elective plan as part of your final elective portfolio.*
>
> *No grade is awarded for this work [risk assessment], but your facilitator is required to pass your risk assessment before you are able to go on*

> *your placement. You cannot go to your placement until your risk assessment has been agreed by your facilitator.*
>
> *(Elective Webfolio Handbook)*

As a part of completing their elective plan, the students had to set at least three personal learning outcomes and one group or shared learning outcome, concerning what they wanted to achieve while undertaking their elective placement.

> ***Document analysis:***
>
> *Before you go on your elective placement you will set your own personal learning outcomes and develop a group learning outcome. These will be included in your Elective Plan, which will outline personal and professional development you wish to achieve. Ensure that the learning outcomes you set are SMART.*
>
> *(Elective Placement Guide)*

6.2.6.5 Develop a Webfolio of elective placement

The students were required to use their e-portfolio system to create a Webfolio, showing evidence of how they achieved their personal and group learning outcomes.

> ***Document analysis:***
>
> *You will create a Webfolio in PebblePad to present evidence showing how you have met your learning outcomes. There is not an exact word limit for this piece of work, however, the amount of time you spend on creating your Webfolio should be equivalent to the amount of time you would spend on a 2,000 word essay.*
>
> *(Elective Placement Guide)*

The students were required to gather materials from their elective placement to be included in their Webfolio as evidence of their achievement of the learning outcomes. They were also strongly encouraged to be creative in their presentation of the evidence in the Webfolio, by including multimedia evidence such as photos, videos, and graphics.

> ***Document analysis:***
>
> *While on placement, you will collect evidence to show how you are meeting your learning outcomes. This can include a range of media including: • written reflections • photographs • videos • audio recordings.*
>
> *(Elective Placement Guide)*
>
> *We have chosen an electronic format as it offers several advantages over a more traditional paper-based format. You [students] are able to collect a range of evidence type. As wells as being able to create and utilise the more standards forms of evidence, such as written reflections and account of direct observations, the electronic portfolio also gives you the opportunity to use a wide range of other forms of evidence such as audio-reflections, photos, videos (NB you must always adhere to standards of confidentiality), other forms of graphic materials etc. This is particularly useful if you have limited computer access, but have a mobile phone with you.*
>
> *(Elective Webfolio Handbook)*

In addition to their evidence, the students had to write a reflection on their experience during their elective placement and explain how they managed to achieve their chosen leaning outcomes. Although they were asked to be creative

in creating the Webfolio, there was, nevertheless, a specific structure and method of organization to which they were expected to adhere.

> **Tutors' interviews:**
>
> *The webfolio itself is more of a reflective account that they build up. So there is a structure to it, so each page of the webfolio has a structure, so there's an introduction, there's an overview of their placement, there's their elective planning and risk assessment, what were their individual learning outcomes, what was their group outcome, and then conclusion and references. So there's a clear kind of structured approach to it but it is very reflective.*
>
> *(Tutor 1, follow up interviews)*

The Webfolio was an assessment task. It counted for 40% of the total grade of the module and it had to be marked by their facilitators.

> ***Document analysis:***
>
> *Your Webfolio will be part of your assessment and will be graded by your facilitator.*
>
> *(Elective Placement Guide)*

> **Students' interviews:**
>
> *It's [Webfolio] 40% of the module. Yes, 60% is examined and 40% is this Webfolio... The grade will be awarded to your webfolio, and your webfolio should include your personal outcomes, your group outcome, and how you met them.* *(Student 6-A, follow up interviews)*

For the group outcome, each student was asked to deliver a small presentation within their chosen group about how they met the group outcomes as part of their elective placement. This presentation was not graded separately, however it was a requirement for the completion of the Webfolio. Following this, the students could upload this presentation to their Webfolio, to add to the group outcome section.

> **Students' interviews:**
>
> *At the beginning we chose a group outcome that we were all going to meet, obviously everyone was going to different places, and then after we did the elective we did a small, like a two-minute presentation each, in front of our class, just to describe how we met that outcome. It was informal, so it wasn't marked, but it was mandatory that you must do it because obviously that goes towards the portfolio [Webfolio] grade, it's just another aspect.*
>
> *(Student 14-A, follow up interviews)*

6.2.6.6 Complete the mandatory online learning packages

It was a requirement for the students to complete some e-learning packages and record the evidence of completing them into their e-portfolio. They were also expected to link the evidence of completion to the appropriate learning outcomes and share them with their tutors using the e-portfolio.

> **Tutors' interviews:**
>
> *Some [learning outcomes] might be compulsory if it's mandatory learning. They might have to write a bit of evidence and demonstrate that through their written work.* *(Tutor 5, follow up interviews)*

6.2.6.7 Adherence to confidentiality and copyright guidelines

Information may, potentially, be shared with unauthorised individuals either knowingly or unknowingly on the internet. Therefore, the students were expected to adhere to certain standards of confidentiality, with regard to provision of information about particular placements or individuals, when recording their learning experiences and activities on the e-portfolio. Any information that could have revealed the identity of a specific placement or individual had to be removed or masked. The Nursing and Midwifery Council (NMC) code considers confidentiality as a fundamental part of the professional practice.

> ***Document analysis:***
>
> *The electronic portfolio also gives you the opportunity to use a wide range of evidence such as audio-reflection, photos, videos but you must adhere to standards of confidentiality.*
>
> (Elective Webfolio handbook)

The students were also required to take consent before taking any photograph, filming or recording someone and before using their pictures, recordings or videos in their Webfolio or e-portfolio.

> ***Document analysis:***
>
> *You must ensure you follow the guidelines on confidentiality, consent and copyright provided by the School of Health Sciences when collecting evidence.*
>
> *(Elective Placement Guide)*

6.2.6.8 Duration of license of the e-portfolio system

An institutional license of the e-portfolio system (PebblePad) was purchased by the School of Heath Sciences, in order to give the students and tutors access to the e-portfolio. However, the students' license was supposed to expire one year after they graduated from the university. That meant that they would not be able to access anything recorded and stored in their e-portfolio after this time. Therefore, they were encouraged to transfer all their stored files to another free, personal account or to download them to their computers. As will be discussed in the contradiction section, the fact that the students knew they would have no access to their e-portfolio after graduation may have influenced their motivation to record their learning in there. However, this rule was only relevant at the time of data collection, because now the students are granted a free ongoing access to their e-portfolio for life.

6.2.7 Division of labour

The section presents the roles and responsibilities of students and tutors, within the process of developing the e-portfolio.

6.2.7.1 Students' role and responsibilities

Record their work and evidence on the e-portfolio

It was the students' responsibility to abide by the above mentioned rules, to complete all of the mandatory tasks and to record them in the e-portfolio, for example, the blended learning activities and the online learning packages. Besides recording these mandatory tasks, they could record any of their other work on the e-portfolio. One of the students, as demonstrated in the excerpt below, described the e-portfolio

as a "one stop shop" where she could record and upload different types of work items.

> **Students' interviews:**
>
> *It's always good to obviously get used to do things online. I've uploaded lots of different kind of word documents that I've typed up work, workbooks, and photographs. I've also uploaded action plans, reflections and uploading different things... so I think that's a good thing that it's one stop shop, you can put different kind of evidence on there.*
>
> *(Student 4-MH, initial interviews)*

Share/submit all the mandatory documents

After completing the mandatory documents, such as the risk assessment questionnaire, elective plan and Webfolio, the students had to submit them to the institutional "assessment" space on the e-portfolio either for formative or summative assessment.

> **Students' interviews:**
>
> *All you've got to do is just everything has to be added to the portfolio, the webfolio in the PebblePad, and when you've finished you just have to submit it. You submit it online and the tutor will mark it online.*
>
> *(Student 9-A, follow up interviews)*

Demonstrate the achievement of the learning outcomes

One of the most important roles the students had to fulfil was showing that they had addressed the required learning outcomes. The best way of doing that was to link the evidence they had collected from their modular work or any related evidence to the appropriate learning outcomes in the e-portfolio.

> ***Document analysis:***
>
> *Whilst the content underpinned each outcome will be covered by the taught and blended learning components of your module, it is your responsibility to show that you have addressed each of the outcomes in your learning. To help, we have provided you with a portfolio- framework [Modular learning portfolio] based on your module learning outcomes. You will be able to add pieces of work to each of these outcomes as you build your learning portfolio.*
>
> *(Modular learning Portfolio guide)*

6.2.7.2 Tutor roles and responsibilities

Monitor students' progress toward achievements of the learning outcomes

One of the most prominent roles of the tutors was to monitor the students' progress in terms of achievement of the learning outcomes shared in the e-portfolio for each module.

> ***Curriculum planners' interviews:***
>
> *Tutors use the e-portfolio to check the students' progress against their learning outcomes for the modules, because the student is supposed to take responsibility for their own learning and all the learning outcomes for each of the modules is in their e-portfolio and they're supposed to show how much progress they've made toward addressing each of these learning outcomes.*
>
> *(Curriculum planner 2, initial interviews)*

Review the completion of the mandatory tasks in the e-portfolio

It was the tutors' responsibility to review evidence of the students' completion of the mandatory learning packages and to ensure that the students had recorded and linked them to the appropriate mandatory learning outcomes in the e-portfolio.

> ***Curriculum planners' interviews:***
>
> *There are certain packages that they have to do and there is a timeframe for those, so we would review those as they go through as well, things like safeguarding, information governance. All mandatory packages are all on PebblePad and the student has to have evidence of completion by a certain day, so we do need to go on, just to clarify that the students are actually doing those.*
>
> *(Curriculum planner 4, follow up interviews)*

Provide support and feedback

Both the tutors and curriculum planners unanimously agreed that the tutors' role revolved around supporting and enriching the students' learning and development by offering them appropriate support and feedback. It involved working collaboratively with the students and encouraging them to share their work and learning with them. The tutors were expected to monitor what the students had shared with them, not only for marking but also to help them to recognise the areas in which their work needed development and improvement, as well as possibly offering them ideas for improvement.

> ***Curriculum planners' interviews:***
>
> *The role of the tutor is to determine the students' learning, to support the students' learning. The original idea around supporting students' learning was to enable the students to share their modular learning with the tutor, and the tutor to mark some of that, and look at it, and work with them on it.*
>
> *(Curriculum planner 6, follow up interviews)*

The following excerpt from the tutors' interviews provides an example of how the tutor helped one of her students who was struggling with the use of e-portfolio.

> **Tutors' interviews:**
>
> *I belief that my role is to provide support to the students for them to achieve… so first of all it was like "you need to share this with me. You need to share that" and the student who still hasn't shared a part of hers, I have gone in touch with her to say "look, if you can't do this come and see me and we will do it together". So I will take her through the process of how to do it and we will work it within that way.*
>
> *(Tutor 1, initial interviews)*

The tutors perceived their role as more of a facilitator, whose job was to encourage the students to take more personal responsibility for demonstrating the achievement of the desired learning outcomes as adult learners. They believed that their role was not to "spoon feed" the students, but rather to put them in charge of their own learning by letting them select the evidence that they saw as appropriate for the

achievement of the different learning outcomes. The tutors, then, would monitor their progress and provide them, accordingly, with the necessary feedback.

> **Tutors interviews:**
>
> *We are encouraging them to be more adult learners in the way in which they achieve their learning, so that they are taking far more responsibility for it. What we are doing is directing them by saying "these are the outcomes" but what we are not saying is "this is what you must show under each outcome to show what you've got there". But what we are saying to them is "you're gathering evidence so you need to use that evidence to show how you're meeting these outcomes and we'll guide you with that". We need to be developing learners that take more responsibility of their learning and become more adult and I think typical health carer and being in nursing environment is that we've always been let's look after people and show them the way.*
>
> *(Tutor 1, initial interviews)*

6.3 Summary

This chapter described the sociocultural context in which the e-portfolio was used. It described the subjects who used the e-portfolio, the object of using the e-portfolio, the desired outcomes, the community whose role was to support the subjects in their use of the e-portfolio, the rules that regulated the use of the e-portfolio and the division of labour among the community (roles and responsibilities of students and tutors). The next chapter will discuss the first activity identified from the data analysis.

CHAPTER SEVEN

Activity 1: Recording and storing work items and evidence

7.1 Introduction

This chapter presents the analysis of the first learning activity that was mediated by the e-portfolio, which was, "Recording and storing work items and evidence". The chapter starts with a description of the components of the 'Recording and storing' activity system, followed by a discussion of the benefits of the e-portfolio as a mediator for this activity. Lastly, the chapter ends with the challenges and contradictions that affected the mediational role of the e-portfolio in this activity.

7.2 Components of the "Recording and storing" activity system

The activity of "Recording and storing" was mapped into activity system triangle. A graphical representation of this activity system is shown in figure 7.1. The components of this activity system are described below in detail. The information about these components was obtained from the different data sources employed in this study, to provide a rich description of the sociocultural structure of the activity system.

7.2.1 Subjects

The subjects in this activity were the eleven students who were described in chapter 6 (section 6.2.1). In this activity, they used the e-portfolio as a platform for recording and storing their evidence and any other work items completed throughout their learning journey.

7.2.2 *Objects*

The students identified two main reasons for carrying out this activity using the e-portfolio. First, they expressed a desire to maintain a record of their learning and development. Second, they wanted to keep their work safe and accessible by recording it electronically, using the e-portfolio.

Maintain a record of learning and development

Keeping a record that showed learning and development over time was one of the objects that motivated the students to record and store any piece of work or evidence that they had created or collected from their experience, within their e-portfolio. They recorded and stored anything they thought could be used to evidence their learning outcomes, show their progress or demonstrate their completion of the required work, as well as anything that they considered important to them. In this regard, the e-portfolio was used as a means of keeping a record of their learning and development. Take, for example, this quotation from the one of the students who recorded and stored everything in the asset store and described her e-portfolio as a "memory bank".

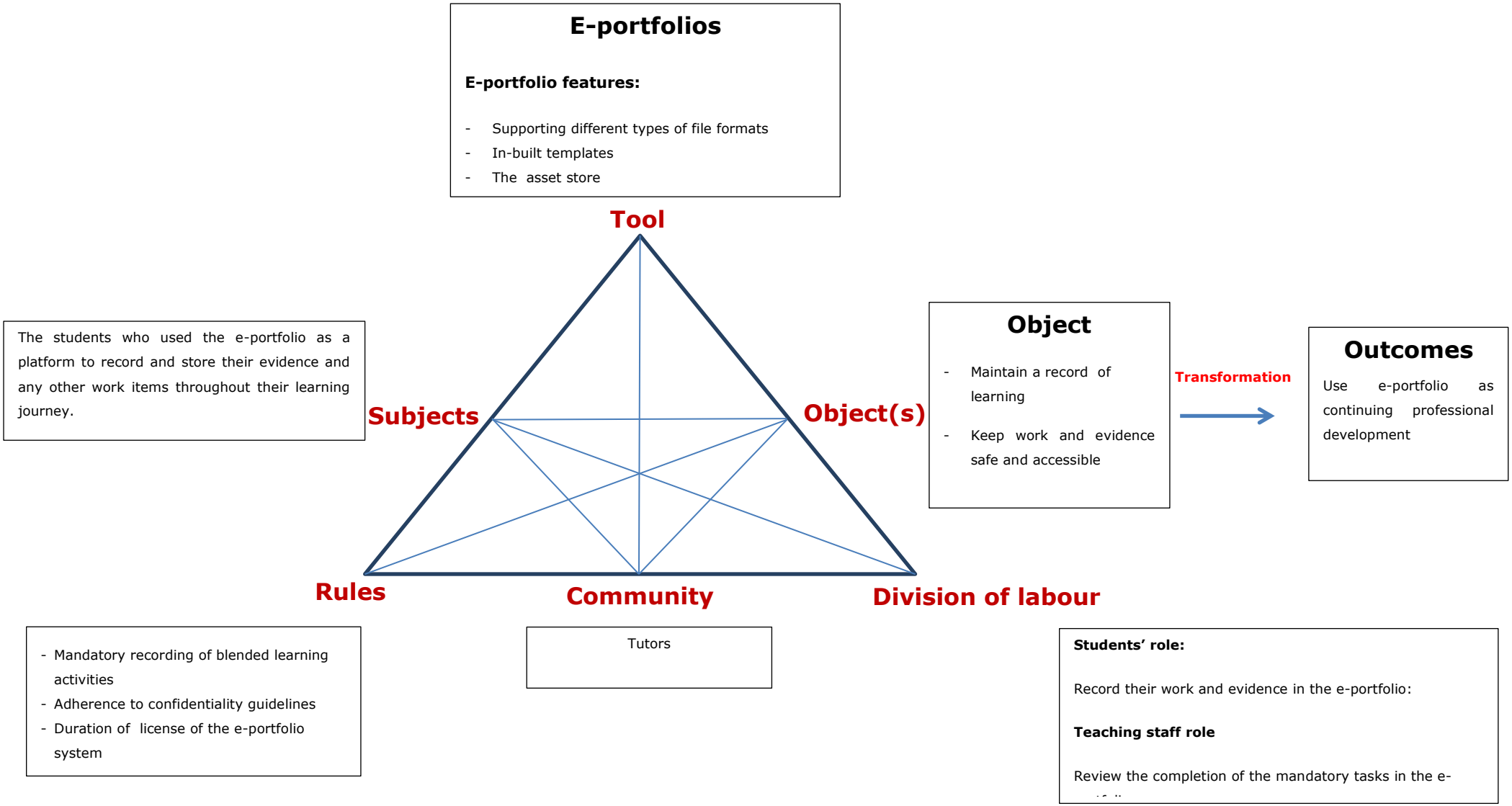


Figure 7.1: Recording and storing information in the learning activity system

> ***Student' interviews:***
>
> *I've got all sorts of assets, I've got reflections, certificates, the blended learning that I've done. If I've got something particularly interesting out of a lecture and a seminar then I will put it up. I've written some of my clinical skills sessions up, just so I don't forget what we've done in there, interesting discussions that we've had, I've kind of typed those up and put them in, e-learning packages that I've done, I've typed those up and that's in my asset store, the NMC code of conduct I've put that up in there. Just things that I suppose I will need again and I have to revisit, whereas I am used to put them on a stick, a memory stick, is getting used to putting everything on there [e-portfolio] because I suppose it's just like a memory bank really.*
>
> *(Student 8-A, initial interviews)*

Keep work and evidence safe and accessible

Given the time and effort the students were spending in recording their work and evidence, they felt it was important to find a means of protecting their work from any accidental loss or damage. Their fear of losing the work, acted as a motivational force that made them record their work in a digital format and store it in their e-portfolio, where they believed it would be more secure and accessible.

> **Students' interviews:**
>
> *I believe that things need to be placed in electronic form portfolio because in the future it's there, it's not gonna be lost, it's not gonna be destroyed and anytime you can access it.*
>
> *(Student 9-A, initial interviews)*

7.2.3 Expected/desired outcomes

Use e-portfolio as continuing professional development

The interview data suggested that the desired outcome of this activity was that the students, after they qualified, would continue to use the e-portfolio as a tool for recording their ongoing professional development activities. According to one of the curriculum planners, some students, of their own volition, expressed an interest in having a personal e-portfolio account after graduation. They wanted to continue using their e-portfolio as a lifetime tool to record and demonstrate their continuing personal and professional development, in order to meet the NMC requirements.

> **Curriculum planners' interviews:**
>
> *They [students] have now started to ask, "How can I have this [e-portfolio] permanently on my radar? How can I permanently have this resource?" And we've now started to discuss things about personal PebblePad accounts and using them as a continual professional tool. It really fits in with the movement, certainly from the NMC and the RCN, about it being a seamless process, really from the first year of training right through into professional practice. Everything should be seamless and that's one thing that PebblePad can offer. I'm getting far more people ask "can I use this when I qualify?", which is really interesting because, you know, we never really pushed it as "you must have this when you qualify", but students are actually saying, "How much does it cost? What can I do with it when I qualify?"*
>
> *(Curriculum planner 4, follow up interviews)*

7.2.4 Tool

The e-portfolio system offered the students tools and functions for recording their learning and achievements in a variety of ways. Examples of these features and tools are: a variety of in-built templates for recording their learning and progress, the asset store for the storage of their work, and the tagging functionality for the organisation of their work in the asset store. During the interviews, the students compared these tools and functions to other paper based storage and organisation options. This will be explained later in the chapter.

7.2.5 Community

The data analysis showed that the "recording and storing" activity mostly took place in the students' private asset store. Therefore, no one could see what the students were recording and storing, unless they had permission to access this from the students. Hence, the community that was involved in this activity comprised those who were able to provide the students with opportunities to record their learning and solve any issues related to the use of the software. Accordingly, the community included the tutors and the HELM team who were described in chapter 6, (section 6.2.4).

7.2.6 Rules and norms

The data analysis showed that the activity of "recording and storing work" was governed by the three following rules, which were described, in detail, in chapter 6, (section 6.2.6):

- ***Mandatory recording of blended learning activities:*** It was a requirement for the students to complete various e-learning packages and to record the evidence of their completion in their e-portfolio.

- ***Adherence to confidentiality guidelines:*** The students were expected to adhere to certain standards of confidentiality, with regard to provision of information about particular placements or individuals, when recording their learning experiences and activities in the e-portfolio. Any information that could have revealed the identity of a specific placement or individual had to be removed or masked.

- ***Duration of license of the e-portfolio system:*** The students' license was supposed to expire one year after they had graduated from the university. That meant that they would not be able to access anything recorded and stored in their e-portfolio after this time. Therefore, they were encouraged to transfer all their stored files to another free, personal account or to download them to their computers. As will be discussed in the contradictions section, the fact that the students knew they would have no access to their e-portfolio after graduation may have influenced their motivation to record their learning in there. However, this rule was only relevant at the time of data collection, because now the students are granted a free ongoing access to their e-portfolio for life.

7.2.7 Division of labour

The data analysis revealed that the roles and responsibilities of students and tutors in the "recording and storing" activity were as follows:

Students' roles and responsibilities:

Record their work and evidence on the e-portfolio: It was the students' responsibility to abide by the above mentioned rules, to complete all of the mandatory tasks and to record them

in the e-portfolio, for example, the blended learning activities and the online learning packages. Besides recording these mandatory tasks, they could record any of their other work in the e-portfolio too.

Tutors' roles and responsibilities:

***Review the completion of the mandatory tasks in the e-portfolio**:* It was the tutors' responsibility to review evidence of the students' completion of the mandatory learning packages and to ensure that the students had recorded and linked them to the appropriate mandatory learning outcomes in the e-portfolio.

7.3 The benefits of the e-portfolio as a mediator for the "Recording and storing" activity

The data analysis suggested that the e-portfolio offered the students a space where they could record their work and evidence of their learning and achievement during their course of study and beyond. However, the analysis revealed that the role of the e-portfolio was not merely limited to providing them with the space to record and store their evidence in a variety of formats. Rather, its role extended to allowing them to have ubiquitous access to their evidence collection in the asset store and also offered them a tool for the organisation of such a collection. These two roles are described in further detail in the following paragraphs.

7.3.1 Provide ubiquitous access

The first theme that emerged from the data captures the benefit of the e-portfolio in allowing the students to easily access their recorded learning, achievements, experiences and activities at any time and from anywhere. The e-portfolio system that the students used was a web-based platform, hence it was

constantly accessible from anywhere and through any web enabled device such as a computer, a smart phone or a tablet. This feature of the e-portfolio allowed the students the opportunity to access everything they had recorded in their asset store when needed and from any device. This instant access enabled them to take advantage of opportunities as they arose and to continue recording their learning and achievements wherever their learning took place. Several students, as demonstrated in the following excerpts, appreciated this feature of the e-portfolio. They appreciated being able to access their work on any web enabled mobile device and not being limited to accessing data from their desktop computers or laptops.

> **Students' interviews:**
>
> *I like that I can access it from anywhere, you don't just have to have that from your computer you can just log on anywhere, anytime and it's just there. So, I like that it's easily accessible.*
>
> *(Student 2-MH, initial interviews)*
>
> *With PebblePad, it's [work] always there, you can access it any time any place, and the good thing at the moment is that I can access it on my mobile phone even though I'm not with my laptop so I can access it anywhere.*
>
> *(Student 9- A, initial interviews)*

The e-portfolio was compared favorably with other paper-based storage options, in terms of its ease of access. This ease of access to their work in the e-portfolio made the students feel positive about the e-portfolio as a record of their learning. They

reported that with the portability of the e-portfolio, they no longer needed to worry about carrying big lever-arch folders with them wherever they went, in order to record their experiences. These paper folders were replaced by electronic format files, which were more portable, mobile and could easily be accessed from any location, with any networked device. They found that this was an opportunity for them to keep track of whatever they had recorded in their asset store, as well as providing an opportunity for recording their experiences and thoughts immediately as they happened.

> **Students' interviews:**
>
> *For the e-portfolio you don't have to be carrying files everywhere and everything. Anywhere you are, as long as you have internet facilities you can easily log in to your PebblePad, look at what you have done, and if you have got an idea you can easily type it in and store it and when you have time you come back to it again. So I think it's more accessible.*
>
> *(Student 11-A, initial interviews)*
>
> *With PebblePad I don't need to carry anything with me, so wherever there's a computer I know, once it's there, I can access it any time.*
>
> *(Student 7-A, follow up interviews)*

The following excerpts from the students' interviews provide examples of how the paperless and web-based nature of the e-portfolio offered them ubiquitous access to their work, regardless of the time or the location.

Students' interviews:

One of the advantages I see is that you can access it anywhere, as long as you have access to the internet, so you can access it and if you want to work on your work you can continue to work and you don't have to be carrying books or files everywhere. Like when I travelled to America last year during my holiday, I was able to access my PebblePad and do some of my school work which I hadn't finished, which is good.

(Student 11-A, follow up interviews)

If I'm on the ward, yes, I can access it, if I'm on the ward and I'm on night shift I can access.

(Student 6-A, follow up interviews)

Similarly, the tutors were in favor of the e-portfolio because it provided the students with the opportunity to easily access, from any location in the world, the evidence they had created and recorded in their asset store. Based on their experience of the paper portfolio with the previous cohorts, the tutors believed that the e-portfolio offered additional benefits. In comparison with the paper portfolio, in that it was easily accessible, portable, and constantly available.

Tutors' interviews:

It gives you the opportunity to have an e-portfolio that you can access wherever you are, so whether you're working locally, nationally, internationally. That evidence on PebblePad stays there so there was an ease of accessibility and obviously less cumbersome than taking paper copies with you everywhere, so I think that's one aspect.

(Tutor 5, initial interviews)

> *Occasionally, students would lose things or forget to bring them with them whereas obviously because now it's electronic you can access it and so I think make things a lot better.*
>
> *(Tutor 10, initial interviews)*

The idea that the e-portfolio could be accessed on mobile phones was especially valued by some students. They reported that there might be situations where they needed to immediately revisit and rework a particular piece of work in their e-portfolio, for example after engaging in a discussion with other students. If this discussion had been particularly enlightening, it could have helped their learning and given birth to new ideas and insights. This, in turn, might have led to new ways of seeing and understanding their previous work and experiences. Therefore, having the ability to access their e-portfolio through their mobile phone was seen as a very convenient means of instantly recording any new ideas that might have emerged from these discussions and work could be edited accordingly.

> **Students' interviews:**
>
> *This one is just there [one of the assets], I can easily go back to that anytime anywhere. If there is a kind of a discussion between students of which there is a kind of argument, even though I'm not at home I can just use my mobile phone to access it through PebblePad.*
>
> *(Student 9-A, initial interviews)*

Mobile phones were also used to access the e-portfolio while on placement. Access through mobile phones was viewed as a quick and easy way for students to capture a live picture of their

clinical experience and record it instantly while on placement. For instance, student 9 was able to use her mobile phone, after obtaining permission from the clinical staff, to remotely access her e-portfolio and document her clinical experience. The multimedia nature of her mobile phone enabled her to use texts, as well as photos, to record her placement experiences directly within her e-portfolio.

> **Students' interviews:**
>
> *I find it very easy keeping your mobile with you on placement, though you have to let the people in the clinical area understand why you're using your phone while on placement, because once they understand that then it's easy for you to use it effectively on your learning, rather than be scared of using it while people are there. Mostly I take pictures or information sometimes, my thoughts, things I need to do, since sometimes you do forget. I write it on my phone or send it back to the PebblePad, so that when I get home they will be on the assets on PebblePad. So when I get home I can easily use them effectively, any way I want to use them.*
>
> *(Student 5- MH, initial interviews)*

After realising the usefulness of accessing the e-portfolio on her mobile phone, the same student, quoted above, stated her belief that the next step should be starting to use digital, handheld devices, such as iPads, to access their e-portfolio while on placement. She suggested that the clinical institutions should consider taking the initiative to invest in making these devices available for students to use whilst on placement.

Students' interviews:

Perhaps it could be an investment in some sort of handheld pad like an iPad. I realize that it would be a massive expense from the National Health Service or for the hospital and trust but it could champion it, it could be the champion and lead the way.

(Student 5-MH, initial interviews)

The ease of access to the e-portfolio on mobile phones appeared to offer the students benefits, not only at an educational level but also in terms of security. One of the curriculum planners argued that the ease of access to the content of the e-portfolio could save the students from getting into difficulties, while they were on an international placement. For instance, the students were expected to provide some details and attach some supporting documents, as a part of their risk assessment and planning for their elective placement. Examples of these documents, included a copy of their passport, flight ticket, medical insurance and other documents. Having access to copies of these documents on the e-portfolio could save them, if they lost the originals of these documents while they were in a different country.

Curriculum planners' interviews:

One of the biggest benefits of it is that they can put copies of their passports and things like that into it, and therefore they've got access to it wherever they are in the world. If they do have a smartphone and they do take the smartphone with them, and they lose their passport, then they should have access to a copy of the passport or a copy of their paperwork. So it's good in that sense and it's

> *probably more secure than doing something similar as using, I don't know, Dropbox or something like that. So I suppose it's good in that sense.*
>
> *(Curriculum planner 6, follow up interviews)*

It seems that the students were not the only ones who valued the ability to access the e-portfolio and its content from mobile devices. The tutors also appreciated that they could access it from their mobile devices at a time and place that was convenient for them. They felt that they were no longer required to look at the students' work at a particular time, for example, during tutorial meetings or having to access the students' e-portfolios from the computers in their offices within the school. They reported that this flexibility in access enabled them to provide better feedback to their students.

> **Tutors' interviews:**
>
> *What I really like about it is I can do it on my iPad wherever I'm. So, I can sit on the train to a meeting in London or something and I can work on somebody's assets so that's much better and I like that. I like the accessibility of it, there is no time limit on it, you don't have to do it within half an hour slots within tutorial. It's much more fluid so you can feedback better to the students because you can sit take your time without saying oh my goodness, I can squeeze you in between these lectures so I like that.*
>
> *(Tutor 7, initial interviews)*
>
> *Convenience is my one big thing. For me personally, I like that I can view it [students' work] anywhere because I do work at home sometimes. Once it's submitted it will come to my view and I*

> *will able to look at it and comment on it so I think that's an advantage.*
>
> *(Tutor 3, initial interviews)*

7.3.2 Provide control over the organization of evidence and materials

This theme describes how the e-portfolio helped the students to constantly organise their work items and the evidence they had created and recorded in their asset store. It shows how the functionality of the e-portfolio enabled the students to develop a personalised system for organising their work and linking it to other parts of the curriculum in a more meaningful and manageable way.

Several students participating in this study realised that by the end of the first year of their course they would have a massive amount of evidence and work which had been created and recorded by them over time. Thus, clear organisation of this work was deemed essential from very early on. In this regard, the tagging functionality within the e-portfolio was viewed as an effective way of organising this large collection. It enabled them to assign label(s) to each piece of work that would make it more memorable and easily identifiable in the long term. These tags or labels could be used as keywords, as a means of searching for their work within the asset store later.

> **Students' interviews:**
>
> *I think the tagging is really good because obviously by the time I finish my first year, there will be all these things in my asset store and the tags will help me to sort of specifically find things rather than thinking "oh gosh I've got three action plans and they are all similar, which one which from which ones." but by tagging it with certain word or*

> *whatever I can actually identify "oh yeah, that was from that module in year one or whatever." So, it helps you to kind of organize it.*
>
> *(Student 4-MH, initial interviews)*
>
> *Everything is a bit tagged because I found that with time, maybe, I will have after a year or two years a lot of information, a lot of them are gonna look the same. So, tagging them made me know the specific one that I'm looking for, the tag shows me the specific thing that I'm looking for. I think that tag is very helpful.*
>
> *(Student 9-A, initial interviews)*

The tags that the students added to their work items differed from student to student. They had the choice of adding tags that were meaningful for them in some way. For instance, some students chose to tag their items by the academic year in which these items had been created, whereas others tagged them by the unit or module the items were relevant to. For the work items related to particular placements, some students tagged them by the type of placement for which the items had been collected or created. This indicated that the students were able to develop their own system, which was able to help them better organise their work in the e-portfolio. Illustrative examples of the tags the students added to their work are shown in the following excerpts:

> **Students' interviews:**
>
> *Everything I put I tag it, unit A, unit B, or unit C. The reason why I'm doing that is I don't want to just taking my time to look for something, I like when it is organized so that I just go and I know what it is.*
>
> *(Student 7-A, initial interviews)*

> *I started putting all my placement evidence on there as well. So, it's "placement evidence" and the "competencies" that I wanna tag them with. Also, I'm doing it that way, unit A is got its own tag, unit B is got its own tag, unit C got its own tag, and all the different items within them have got their own tags.*
>
> *(Student 2-MH, initial interviews)*
>
> *I tag everything, pretty much. I put tags as "year one", "hub placement", "spoke placement". I just tag it by what's relevant to it, really, what' relevant to the work. It just depends on what piece of work it is, really, so I can find it easier when I'm looking for it later on.*
>
> *(Student 4-MH, follow up interviews)*
>
> *I tag it [any work item], I give it a title. So, if it is related to the elective placement just tag it "elective". That is, if it is Unit A, just tag "blended learning Unit A". If it is Unit B, I tag it "Unit B blended learning", or if it is "Unit B personal care", so I know that's what I'm looking for.*
>
> *(Student 11-A, follow up interviews)*

This tagging functionality was compared to the use of sticky notes as a tool for organising, classifying and labelling evidence in paper portfolios. Based on their experience with both formats of the portfolio, some students found that using tags to organise and search for their evidence was easier and more practical than using sticky notes. These notes were criticized by the students for not being permanent, as they lose their stickiness over time with repeated use and being shifted from section to section.

Students' interviews:

I know that in my big folder I've got all these sticky notes that say what the titles of the pieces, what it is, whether it's direct observation or work product or a reflective piece. I've got as many sticky notes as I have bits of paper. So, I'm a bit worried that they gonna fall off and lose their stickiness, because I used them you know let's hold that bit, go over and find it, whereas with this [the e-portfolio] you have to just type in, tag what you want and everything comes up.

(Student 2-MH, initial interviews)

Tagging was not only valued for its usefulness in helping the students to organise their evidence. It was also appreciated for the powerful pedagogy that underpinned the process. The students asserted that the process of adding tags to their work was thought provoking, in that it stimulated them to think about the aspects of the curriculum to which the evidence might be linked.

Students' interviews:

I guess within the asset store you've just got a long list of documents, but what you do is you have to try and think of these tags like which unit or module these documents belong to.

(Students 13-A, initial interviews)

I think the tags are also quite useful because when I make tags it helps me to think about what they're and which evidence they're appropriate for.

(Students 3-MH, initial interviews)

Another pedagogical value of the tagging functionality was its ability to enable the students to create connections between their different pieces of work and to see the wider picture. Tutor 5 described the tags as being "movable" because one tag could be assigned to different pieces of evidence. She also argued that aggregating this different evidence under one tag would help the students to understand how their evidence was interconnected and linked.

> **Tutors' interviews:**
>
> *The other thing it [tagging] does really well is linking things. It can link a few pieces of evidence together because tags are more movable as you can put a tag name that pulls off three or four pieces of evidence that you have uploaded. So, I think that will be good for our students.*
>
> *(Tutor 5, initial interviews)*

7.4 Challenges and Contradictions in the "Recording and storing" activity

The data analysis revealed that there were three main challenges affecting the students' use of the e-portfolio for recording and storing their work. These challenges were: students' lacking sense of ownership, their fear of an internet or system crash, and their dissatisfaction with the organisational style of the files. To identify the contradictions that caused these challenges and affected the mediational role of e-portfolio, the "recording and storing" activity system was broken into sub-triangles or sub-activities. Then, the interaction between the components within each sub-triangle was analysed, in order to identify the areas of contradiction. Both

the challenges and related contradictions are explained below. Table 7.1 summarises all these challenges and contradictions.

7.4.1 Rules related challenges

Lacking sense of ownership

The initial interviews with the students revealed that many of them felt a lack, in terms of their ownership of their e-portfolios. As shown in table 7.1, the reason for this feeling was found to be rooted in a contradiction between the subjects and the rule elements, within the activity system. Several students (subjects) expressed their frustration at knowing that they would not be able to access their e-portfolio after graduation because their free license would expire as soon as they left the university (rules). This contradiction discouraged some of the students from becoming more actively engaged with the e-portfolio and from using it for recording and storing their work. It made them feel the e-portfolio was not theirs at the end, which may, to some extent, have defeated its purpose of helping them to maintain an ongoing record of their learning and development.

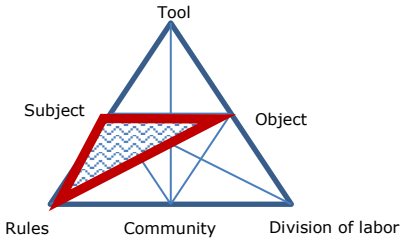
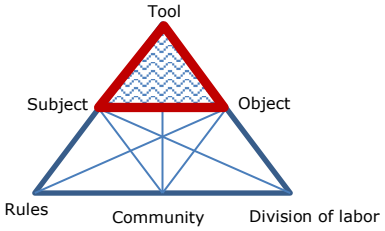
> **Students' interviews:**
>
> *I think I haven't wanted to just keep anything just on PebblePad because I know that after I qualify I have to pay to keep using it and you can't download things easily off it so I've just done stuff on the computer and then uploaded it, so it's making me work.*
>
> *(Student 1-MH, initial interviews)*

The students compared the e-portfolio to its paper counterpart with regard to its availability, and their ability to access to their work after graduation. Apparently, they felt that the paper

portfolio gave them a greater sense of ownership than the e-portfolio. They felt that the paper portfolio was theirs at the end because they did not have to renew or buy a license to keep it after they had finished their course. Accordingly, recording and storing their work in the e-portfolio was viewed as purposeless and waste of time, as is shown in the following excerpts.

> **Students' interviews:**
>
> *I haven't used it too much because I prefer the paper portfolio. I don't see the value actually right now and I don't know if it's really useful to have an e-portfolio because if I finish my degree or if I am going to apply for a job, will it be still available to me? That's what I'm asking myself. With the paper one I think I will still keep it to myself wherever I go but with the e-portfolio how will I have it after I finish the course or if I want to look for a job, I don't know how it works. We don't know yet, because it's like you are doing sort of e-portfolio but will it be still available to you or maybe it might be a waste of time to do all those work.. you put all these things together and then not being able to have them at the end of the course.*
>
> *(Student 7-A, initial interviews)*
>
> *I just think it's [paper portfolio] an old fashion way and I can see why the purpose of trying to do PebblePad, it saves paper or whatever or just to make it easier but we still not gonna have access to this once we leave. So, I don't see the point of doing it.*
>
> *(Student 10-A, initial interviews)*

Table 7.1: Challenges and contradictions in the recording and storing activity

Challenges		**Area of contradiction / sub-triangle**	**Explanation**
Rules related challenges	*Little sense of ownership*	**Subjects- Rules- Object** 	Students felt a lacking sense of ownership of their e-portfolios as a result of a contradiction between the subjects and the rules elements in the activity system. Several students (subjects) expressed their frustration at knowing that they would not be able to access their e-portfolio after graduation because their free license would expire as soon as they left the university (rules).
Tool related challenges	*Fear of internet or system crash*	**Subjects- Tool- Object** 	Some students expressed their fear of experiencing a possible internet or system crash that might result in them losing their work. This fear was caused by a contradiction between the subjects and tool elements in the "recording" activity system. The electronic and web-based nature of the e-portfolio made some students question its reliability as a recording and storage facility. The anticipation of having these technical crashes formed a barrier for some students

			to entirely trust the e-portfolio for recording their work and evidence.
	Dissatisfaction with the organization style of files		Some students were not satisfied with the way their work was organized in the asset store. This dissatisfaction was found to have resulted from a contradiction between the students (subjects), who preferred the traditional way of using folders to organize their work and the e-portfolio system (tool) which did not use folders for organising and storing files, but used tags instead.

This contradiction seems to have been resolved, because the students now are entitled to have a free a lifetime, personal e-portfolio account after they graduate. Having this free account will allow them to continue recording their personal and professional activities throughout their career

7.4.2 Tool related challenges

Fear of internet or system crash

The security and accessibility of their work was one of the students' main objects in carrying out the "recording and storing" activity by digitally recording it in their e-portfolio. However, some students expressed their fear of experiencing a possible internet or system crash that might result in them losing their work. As illustrated in table 7.1, this fear was caused by a contradiction between the subjects and the tool elements in the "recording" activity system. The electronic and web-based nature of the e-portfolio made some students question its reliability as a recording and storage facility. The anticipation of these technical crashes formed a barrier for some students in terms of entirely trusting the e-portfolio to record their work and evidence. The following excerpts from student interviews show how the fear of losing work due to unexpected technical issues caused some students to use their USB memory stick, as a means of backing up their work.

> **Students' interviews:**
>
> *My fear is what if there is a crash in the computer or the system break down you know, all your work will have been gone… that's why I store in my USB, so I use that as a backup… If something happens, you know, with pebblepad like system breakdown.. we have had a system breakdown before,*

> *everything will be gone, so what is going to happen? Anything can happen.*
>
> *(Student 11-A, initial interviews)*
>
> *I still put it [her work] on my stick as well. It's just, you know, I am scared and I am thinking "oh, if everything is on the internet what if the internet crashes?". So, I double everything up.*
>
> *(Student 8-A, initial interviews)*

Experiencing repeated technical problems while recording their work in the e-portfolio caused some students to prefer the use of a paper portfolio. As demonstrated in the following excerpt, the fact that a student was unable to retrieve her unsaved work, after experiencing a sudden system crash, made the e-portfolio a less appealing tool for her. She felt her work would have been safer in a paper based portfolio.

> **Students' interviews:**
>
> *I feel more secure if my work's in a folder, I suppose, rather than on PebblePad, because of the technical problems with PebblePad. Sometimes I've written a page on PebblePad and my computer has just shut down, and then I haven't saved it so I've lost all my work. So that's happened a couple of times and my screen has frozen or something annoying has happened, and I've lost my work.*
>
> *(Student 10-A, follow up interviews)*

Dissatisfaction with the organization style of files

The data analysis showed that some students were not satisfied with the way their work was organised in the asset store. As can be seen in table 7.1, this dissatisfaction was found to have resulted from a contradiction between some of the students

(subjects) who preferred the traditional means of using folders to organise their work and the e-portfolio system (tool) that used tags instead. Some students disliked that all their pieces of work and evidence were displayed as just a long list in their asset store. They were disappointed that the e-portfolio system that did not enable them to create folders in their asset store to organize and manage this long list. This issue seems to have discouraged some of the students from recording their work in the e-portfolio. The following excerpts provide examples of how much the students felt frustrated because of their inability to create folders in the e-portfolio.

> **Students' interviews:**
>
> *It just feels a bit cluttered because there are no kind of folders to put stuff in whereas like a computer you've got your documents folder and you can split that up whereas with PebblePad is just all the tag and things and it just there in one long list…To an extent it annoyed me a little bit, it wasn't all nice, neat and tidy but I've got the hang of tagging things now and I know what to tag and I know what to tag them with.*
>
> *(Student 6-A, initial interviews)*
>
> *I don't think there is any organization about it like you can't organize.. I don't know how to like organize my work like put all my blended learning in one section for unit A, all my blended learning in one section for unit B, you can't do that. It's just a list of files you've got in your personal space. We need to be able to create our own folders and organize things our own way because people have different ways of keeping the work organized. Just like be able to use folders to organize your work. I think we should be able to do that.*
>
> *(Student 12-A, initial interviews)*

The students found that having only the tagging functionality was not enough for them to be able to organise their work the way they wanted it. Even with the tags attached to every piece of work, their work was still displayed as a long list in the asset store. Therefore, they were in favour of having folders instead or maybe having a full functionality for both folders and tags and, therefore, the ability to use them in combination to organise their work.

> **Students' interviews:**
>
> *Everything's just logged in a big list, so it's a pain trying to find anything. I put, obviously, tags in it but you can't organise it. I don't know. There's something about the organisation I don't like because it'd be better if you could have folders where you could do year one, year two, and then do your tags. But instead you've got it all in one list and then trying to organise that is a bit of a nightmare, because I know they said you could organise through your tags but I've never been able to organise it with any benefit to me. So I've just kind of left them in a list so it takes forever scrolling down.*
>
> *(Student 8-A, follow up interviews)*
>
> *Obviously you can tag your things, and you can see the tags and the names of the tags on it, but it would be easier to click on there for all your placement evidence. So it would be much easier to navigate, basically, than when you open your asset store and you're just faced with all this list of stuff and then you have to look for the tags. It'd be easier to just actually have it, like, "this is for placement evidence, this is for online learning", that kind of thing, so you could just click on that folder or whatever and actually get straight to it. It's more easy to navigate.*
>
> *(Student 10-A, follow up interviews)*

In an attempt to resolve this contradiction and reduce the their frustration, some students found it helpful to save a copy of their work on their computer's hard drive or a USB memory stick, where they had the ability to create as many folders as they wanted. They believed that creating these folders was an efficient way of storing, organising and retrieving their work. Below are examples of how the students used these folders to develop their own system of organising their work.

> **Students' interviews*:***
>
> *There's no folders there [on e-portfolio] and you cannot really organize it because a lot of people's brains work in a different way, people want to arrange things in a certain way, if you cannot do it, it becomes a little bit frustrating…so I have a different way of organising all these things in the computer differently, like the year, like most of the work I've done in the first year, I created files for first year. Yes, I've done that. Those kind of information, I don't really need them at the moment. They're there. Anytime I want them, I can easily go there. They're there. They're not mixed with the ones that I'm using at the present, which is good.*
>
> *(Student 5-MH, initial interviews)*
>
> *I've got my own system on my memory stick. So I've got my different folders, and I've got one for the University [name], then I've got "Year 1", "Year 2", "Placement", and then in "Year 1" there's "B7101", "B7102", "B7103", "Learning for Practice 1", and everything that went in there. So each one had an assignment folder and it was like, "May", "January", and then this year it's been "B7204", "205", "206", "Learning for Practice 2". And then the placement folder has got "Year 1", "Year 2",*

> *and then each one of them has got "hub" and "spoke". But then my documents are named for what they are, so it'll be "Reflective Writing 1", "Reflective Writing 2", and then for Year 2 it's "Year 2 Reflective Writing 1", "Reflective Writing 2", just so that I can distinguish between them. I'd got all of that also replicated on the laptop documents as well.*
>
> *(Student 8-A, follow up interviews)*

7.5 Summary

This chapter discussed the first learning activity in which the e-portfolio was a mediator. The e-portfolio was more than just a storage space. It provided the students with ubiquitous access to their stored work so that they could record their learning at any time and from anywhere. It also provided them with control over the organisation of their stored work and enabled them to develop their own personal system for organisation. The data analysis revealed, however, that the students experienced a number of challenges that may have affected their use of the e-portfolio as a tool for recording and storing their evidence. These challenges were: lacking sense of ownership, fear of an internet crash and the dissatisfaction of some students with how they were able to organise their work. The next chapter will present the next learning activity that was mediated by the e-portfolio: evidencing the achievement of learning outcomes.

CHAPTER EIGHT

Activity 2: Evidencing the achievement of Learning Outcomes

8.1 Introduction

This chapter presents the second of the e-portfolio-mediated activities, "evidencing the achievement of the learning outcomes". The data analysis showed that demonstrating the achievement of the learning outcomes, through the presentation of the appropriate evidence, was a mandatory activity the students were required to accomplish in order to fulfil their course requirements. This activity involved the students selecting the most appropriate pieces of evidence they had gathered from their modular or placement work, and linking them to the relevant learning outcomes. To avoid any confusion, it is worth mentioning that the students in this study were using two different portfolios. The first portfolio was the "practice portfolio" in which the students were required to collect evidence to meet the practice competencies. The second portfolio was the e-portfolio, "PebblePad," that was used as a personal learning record, where the students could collect any evidence, mainly from their modular work, in order to meet the theoretical learning outcomes. The focus of this chapter, therefore, is how the students used the e-portfolio to achieve these learning outcomes.

The structure of this chapter is similar to the previous one. It comprises three main sections. The first section aims at describing the components of the 'Evidencing' activity system. The second section presents the benefits of the e-portfolio in helping the students to evidence their achievement of the learning outcomes. The last section provides a detailed account

of the challenges the students experienced while carrying out the "Evidencing" activity and the contradictions that caused them.

8.2 Components of the "Evidencing" activity system

The activity of "evidencing" was mapped onto the activity system triangle. A graphical representation of this activity system is shown in figure 8.1. The components of this activity system are described, in detail, below.

8.2.1 Subjects

The subjects are the same fourteen students who were described in chapter 6 section (6.2.1). The students in this activity used the e-portfolio as a platform to demonstrate their achievement of the learning outcomes by selecting the most appropriate evidence and linking this evidence to the relevant learning outcomes.

8.2.2 *Objects*

The students identified three reasons that motivated them to carry out the "evidencing" activity. First, they wanted to meet the course requirements. Second, they thought that evidencing their achievement of the learning outcomes would enable them to monitor their own achievement and third, they wanted to link the theory to the practice.

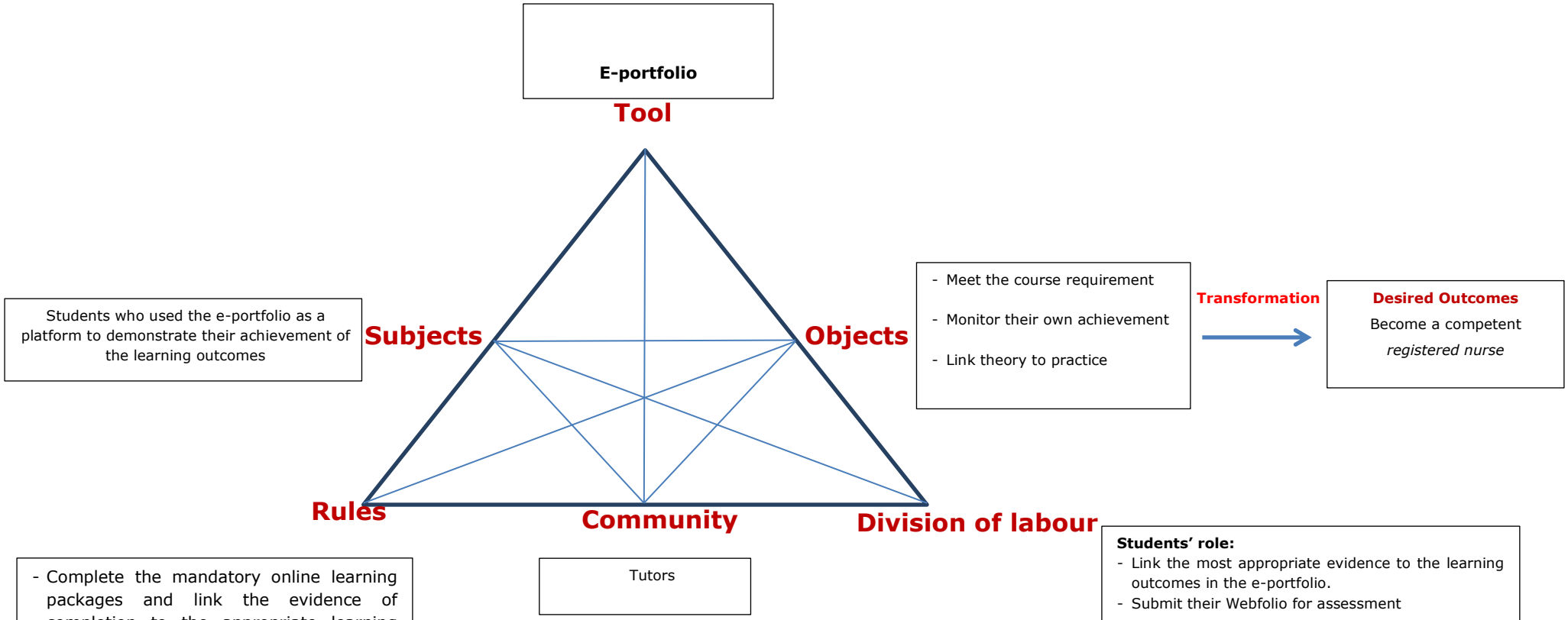


Figure 8.1: The "Evidencing the achievement of learning outcomes and competencies" Activity System

Meet the course requirements

For several students, their first motive in providing evidence of their achievement of the learning outcomes was that they wanted to meet the course requirements. As shown in the excerpts below, the students were required to prove that they had acquired certain knowledge and skills in order to be able to move to the next level.

> **Students' interviews:**
>
> *If we don't meet these learning outcomes we can't move into year two.*
>
> *(Student 8-A, initial interviews)*
>
> *You just have to prove that you've done it. If I said I've read how to take temperature, pule respiration, what is the evidence? So, by me putting it on PebblePad that would help me to say that is evidence that I've done it okay. So, I achieved my outcomes basically.*
>
> *(Student 11-A, follow up interviews)*

Monitor their own achievement

Other students reported that passing the course was not the only motive that encouraged them to provide evidence of their achievement of the learning outcomes. Rather, they were intrinsically motivated to do so, in order to monitor their own learning and achievement. For example, the student quoted below believed that evidencing her learning would keep her moving in the right direction.

> **Students' interviews:**
>
> *It's all part of the learning that you've got to show how you're meeting the learning outcomes, and it*

> *helps to focus and it point you in the right direction for your learning. So it's not just to pass the course.*
>
> *(Student 4-MH, follow up interviews)*

Link theory to practice

The third motivation for the students to engage in the 'Evidencing' activity was their desire to link theory to practice. They believed they could do that by linking their work from their placement to the modular learning outcomes.

> **Students' interviews:**
>
> *I could use some of my placement evidence and tag it for academic learning outcomes, do it that way, because then I'm applying placement to a theory block and theory block to a placement.*
>
> *(Student 2-MH, initial interviews)*

8.2.3 Expected outcomes

Become a competent registered nurse

It can be implied from the curriculum book that the expected or desired outcome of this activity was to help the students to become competent, registered nurses. The Nursing and Midwifery Council (NMC) has stated standards of competence that the students are required to meet, by the end of their programs in order to be able to register. These standards are what the council consider essential preparation for the creation of competent practitioners, who will be able to meet the constant changes of the health care environment and deliver safe and effective nursing care.

Document analysis:

Learning outcomes ensure achievement of University of Nottingham Level 3 (first degree) standard by the end of the programme providing a program that challenges learning and enable students to apply theoretical concepts for nursing care to field specific situations in practice.

Graduates of this program will be able to meet the challenges of the role in practice and be clinically competent and confident to meet the demands of contemporary healthcare.

(Curriculum Document Bsc Nursing)

8.2.4 Tool

The e-portfolio system the students were using, PebblePad, was designed to allow them to upload and manage their work items and to attach them to the appropriate learning outcomes as evidence.

8.2.5 Community

The community involved in this activity included the tutors (previously described in chapter 6, section 6.2.4). These tutors had access to the document where the students were supposed to link their evidence to the learning outcomes in their e-portfolio. Their roles and responsibilities in this activity will be discussed in the following sections.

8.2.6 Rules

The data analysis revealed that activity of "evidencing" was governed by the two following rules (please refer to section 6.2.6 in chapter 6 for more details about these rules):

- Complete the mandatory online learning packages, link the evidence of completion to the appropriate learning outcomes and share them with tutors using the e-portfolio.

- Develop a Webfolio providing evidence from the elective placement demonstrating how they had achieved their self-chosen personal and group learning outcomes. The Webfolio was an assessment task, which counted for 40% of the total grade of the module and had to be marked by the facilitators.

- The students were also required to take consent before taking any photograph, filming or recording someone and before using their pictures, recordings or videos in their Webfolio or e-portfolio.

8.2.7 Division of labour

The data analysis revealed the following roles and responsibilities of the students and the tutors in the "evidence" activity. Please refer to section 6.2.7.2 in chapter 6 for more details about these roles.

Students' roles and responsibilities

- Demonstrate their achievement of the learning outcomes by linking the most appropriate evidence to the learning outcomes in the e-portfolio
- Submit their Webfolio, after completion, to the institutional "assessment" space in the e-portfolio for summative assessment.

Tutors roles and responsibilities

- Monitor the students' progress in terms of their achievement of the learning outcomes shared in the e-portfolio for each module.
- Provide them, accordingly, with the necessary feedback.

8.3 The benefits of the e-portfolio as a mediator for the "evidencing" activity

The data analysis suggests that the electronic nature of the e-portfolio opened up new possibilities for allowing the students to demonstrate their achievement of the specified learning outcomes. These possibilities were captured in four themes drawn from the data. The e-portfolio was found useful in: (1) providing an easy way for students to link their evidence to the outcomes, (2) supporting multimedia evidence, (3) facilitating progress monitoring and provision of feedback, and (4) allowing for the creation of meaningful connections between various pieces of evidence. Each of these themes will be described, in detail, in the following sections.

8.3.1 Providing an easy way to link evidence to outcomes

The first theme that emerged from the data captures the benefit of the e-portfolio in facilitating the process of linking the students' evidence to the learning outcomes. Several students, despite their initial worries, appreciated the value of the e-portfolio in allowing them to easily upload and attach their work to the required learning outcomes. They believed that the e-portfolio made it less complicated than they had

thought. A clear example of this can be seen in the following excerpts:

> **Students' interviews:**
>
> *I think at first I thought this gonna be a bit of a faff having to kind of trying link everything to the modular outcomes and upload it and I thought it would be a bit of a long process. But once you started it, I found it quite easy to link what I've done and then put it on PebblePad and then link it to the modular outcomes. I found it quite easy, so for me that was good.*
>
> *(Student 4-MH, initial interviews)*

The e-portfolio was compared favourably with paper based records in terms of the ease of linking evidence. The students reported that the electronic nature of the e-portfolio made it easier to update or modify the links between the evidence and the learning outcomes. It also allowed them to add more evidence to a particular outcome, without their e-portfolio appearing "scruffy".

> **Students' interviews:**
>
> *I think it probably would be really good if my mentor could use PebblePad [e-portfolio] because I think if that was done electronically that would be useful. It would be tidier, because I find, with my paper book, I've had to keep updating it so I've been scribbling it out and putting new forms of evidence in, and changing Bondy levels a couple of times. So it's quite a scruffy book now, whereas you don't get that problem on electronic media, it's much neater.*
>
> *(Student 1-MH, follow up interviews)*

As demonstrated in the excerpt below, the tutors seemed to hold similar opinions, regarding the benefits of the e-portfolio, in terms of linking the evidence to the outcomes, in comparison with paper based records. They suggested that, unlike paper based records, the flexible nature of the e-portfolio made it less complicated to link different pieces of evidence together.

> **Tutors interviews:**
>
> *I could see that will be particularly useful for the students to very easily whatever bits of evidence they produce they can link it to the different learning outcomes and you can just do that very easily rather than having these very complicated tables where you are trying to show which bit of evidence relates to which outcomes. They can do that much more easily I'm sure. I think it would be easier in pebblepad.*
>
> *(Tutor 11, initial interviews)*

The students believed the structure of the e-portfolio, and the way it was designed, made the process of linking their evidence easier and more structured. It allowed them to have all their evidence stored in one place, which made it more manageable and more easily linkable.

> **Students' interviews:**
>
> *It kind it brings everything together. It also says this is what you need to be able to do and it kind of gives structure. You have things in your asset store to be able to put them on into the modular outcomes. It's like everything seems to be so structured around that and then to be able to go round share this with other people.*
>
> *(Student 2-MH, initial interviews)*

Likewise, the e-portfolio allowed the students to collect all of their learning outcomes in one place, which made them more prominent. It seems that consistently having their outcomes in front of their eyes worked as a constant reminder of what they needed to do, in terms of finding the appropriate evidence to meet them. Take, for example, this quote from one of the students, who valued the e-portfolio because it displayed all of the outcomes in one place, which, therefore, kept her focused on what she had to do.

> **Students' interviews:**
>
> *All our outcomes on each module are there [e-portfolio], which was interesting to me, it helps me to know what to do, It helped me to be focused because when I saw them I say 'oh those all I need to achieve by the end of the year' which was good for me. It helps me to know what to do and not being distracted or reading things that are not important but rather be focused, so it helps with that.*
>
> *(Student 11-A, initial interviews)*

8.3.2 Supporting multimedia evidence

This second theme describes how the electronic nature of the e-portfolio benefitted the students, in that it allowed them to incorporate multimedia evidence. It shows how the e-portfolio enabled the students to demonstrate their skills, knowledge and abilities more creatively and using a variety of formats. Several students in this study, as demonstrated in the excerpts below, appreciated the e-portfolio for allowing them to present their evidence in multimedia formats, such as photos, videos, web links and texts.

Students' interviews:

I can put a range of different kind of evidence on there [the e-portfolio]. That's really good, I can upload many different files, I can scan things and upload them.

(Student 4-MH, initial interviews)

The web portfolio is like, you put pictures and stuff on it, you can do video recordings and things like that, and put it on the web portfolio. I think it's just a different way of you writing your evidence.

(Student 14-A, follow up interviews)

I'm going to be able to include more variety of types of evidence, so pictures, and audio, and different kinds of documents, and links to websites that I've used and articles I've looked at. It'd be a lot trickier to do that on paper than on a digital one.

(Student 1-MH, follow up interviews)

It seems that the students were not the only ones who valued the ability to incorporate multimedia evidence into the e-portfolio. The tutors also believed the ability to use multimedia evidence in the e-portfolio enabled the students to show and the reader to better understand the multifaceted nature of their experience. For example, the tutor quoted below appreciated the amount of information the multimedia evidence allowed the students to provide about their experience.

Tutor interviews:

So with the Webfolios, I've just finished marking them and the students have done brilliant stuff. They have

> *uploaded videos into their Webfolios, they've got lots of pictures, they've got lots of information from different sources, they've used podcasts, they've used PowerPoints, all of that they've uploaded into it. And you've got from the very good to the not so good pieces of work but it's been great to actually look at them and read through it.*
>
> *(Tutor, follow up interviews)*

The data from online observations of the students' e-portfolios revealed that the e-portfolio enabled the students to use different combinations of media to evidence their achievement of the learning outcomes. With regard to the first combination, several students, in their elective placement Webfolio, used a combination of photos and texts as evidence of their acquisition of certain knowledge or skills. After reading the students' Webfolios several times, it became clear that the students either used the photos to support what they had written or used the text to explain what was in the photo. Either way, they both were used together as one piece of evidence to demonstrate the student's achievement of the learning outcomes.

The incorporated photos were either taken by the students themselves or were given to them by their placement provider. Some photos were of the students performing a particular procedure, while other photos appeared to be of clinical staff in the placement engaging in a particular activity. Other photos were of the devices or equipment that they had learnt how to use while on placement. Examples of these photos are shown in figure 8.1 and 8.2.



Figure 8.1: Student 9 shows a photo of the device that he learnt how to use while on placement



Figure 8.2: Student 6 shows a photo of one of the nursing staff preparing medication

When the students were asked in their interviews about why they had incorporated photos into their Webfolio, the reason given was not only that they could use them as evidence of their achievement of the learning outcomes, but also that using only text to show their experience might be boring for the reader and would not allow them to show the full variety of their experience. In addition, they believed that adding

photos to the text would provide a richer account of their learning, make their story more visually appealing and engaging, as well as adding authenticity to their story, because "seeing is believing". The excerpt below, from one of the students, seems to summarise all of the reasons reported by other students.

> **Students' interviews:**
>
> *When you use pictures in the webfolio it creates beauty, it shows what opportunity you had and it's all on it, what you've done on the screen. Sometimes people want to see pictures because every picture is very engaging and to avoid being bored, especially when you're reading it… sometimes when you're talking about your experience, what you've learnt, in a clinical setting, sometimes the pictures will give you everything you need to say. The pictures will always enable people to follow where you're going because "seeing is believing"… that's me there. I tried to really create kind of a picture whereby sometimes you don't really need to read. Sometimes reading can be very boring but if you look at a picture you already know what I'm telling you. You already know the ward where I've been.*
>
> *(Student 9-A, follow up interviews)*

The online observations also revealed that another combination of media the e-portfolio allowed for was texts and videos. The e-portfolio enabled the students to integrate videos, or links to videos on the internet, into their Webfolio. For example, the student quoted below recorded a short video of a real coronary angiogram while she was on her elective placement. She combined this video with a text explaining the knowledge she had acquired about this procedure. Then, both the video and the text were linked to one of her personal

learning outcomes in her Webfolio. When she was asked about this video during her interview, she went on to explain the procedure to the researcher, as shown in the quote below.

> **Students' interviews:**
>
> *This one is kind of the video I was telling you about. You see this place here? There's a blockage here, there's a blockage everywhere here. These are the arteries of the heart. You see here, these are the lungs, you see the dark bits here, these dark bits here, these are lungs, so with a pump, they're pumping something with a blue liquid, because on the airstream you cannot see the blood with the airstream, so you use blue liquid, with blue liquid you can see.*
>
> *(Student 9-A, follow up interviews)*

The students were also required to adhere to confidentiality guidelines and take consent before using someone's pictures, recordings or videos in their Webfolio or e-portfolio. It seems that the students in this study were aware of this rule.

> **Students' interviews:**
>
> *I took some pictures and stuff like that, and because I was here at [name] Hospital there're some pictures that have been taken that we're officially allowed to use. So I'm assuming, like the outside of the hospital and stuff like that, because obviously some of the pictures you weren't allowed to take for copyright reasons and other pictures for confidentiality and stuff.*
>
> *(Student 14-A, follow up interviews)*
>
> *I've taken some pictures from the placement and then used some family pictures because there was a big thing on consent and things like that; consent forms that I*

> *needed to do, so I kind of went for basic pictures. That's my nephew, I knew you wouldn't be allowed to put one of the babies from the hospital so I thought I'd use one of my family.*
>
> *(Student 8-A, follow up interviews)*

8.3.3 Facilitating progress monitoring and provision of formative feedback

This theme captures the role of the e-portfolio in facilitating the process of monitoring the students' progress toward achievement of their learning outcomes and facilitating the process of providing formative feedback, in terms of possible improvements. There were two strands to this theme: firstly the e-portfolio allowed the students to self-evaluate their own progress in terms of their achievement of the learning outcomes, and, secondly, it allowed the tutors to monitor the students' progress and, accordingly, to provide formative feedback. Both strands are described presented below.

8.3.3.1 Allowing students to self-evaluate their own progress

The e-portfolio seemed to make achievements and progress more prominent to the students, as it provided them with a personal space in which they could view all their evidence together in one place. This seemed to have enabled them to more easily evaluate their own development and progress, in terms of what outcomes they had or had not achieved and, also, to identify what still needed to be done in order to achieve them.

> **Students' interviews:**
>
> *It's [the asset store] a constant reminder. It shows you the achievement you've done, things that have been*

> *done and things you need to do. I think the first thing is you to have them [evidence] here, because if you don't have them here it's pointless because you don't have anything to really shoot for but you have them here as a constant reminder of what you have done or what's you have not done and what you have not finished.*
>
> *(Student 9-A, initial interviews)*

> *It's [e-portfolio] good because I can see what I haven't done, maybe I thought I've done it but I haven't, which is good… That one was one of the first assignments for Unit A about "hypertension". I still haven't done it but I put it there [the asset store]. But, I know I have to do it.*
>
> *(Student 7-A, initial interviews)*

The e-portfolio offered the students another feature that worked as a visual reminder for them to quickly evaluate their own progress. This feature was called the "rosette", and was located under each outcome in the e-portfolio. Several students appreciated the fact the colour of the rosette changed like a traffic light, depending on whether the outcome had been partially or fully evidenced or had not been evidenced at all. For them, this was a reminder of whether or not they needed to revisit an outcome and add more evidence.

> **Students' interviews:**
>
> *The little rosette is a good way of checking "have I done that?"… The rosettes changing colour is really good and the fact that you can say that "well, it partially evidences it but it doesn't show it completely". Rather than just going from red to green as soon as you've put something*

> *on, it has the amber in the middle, which kind of says "you need to come back to this, you've got stuff there but you need to come back and put something else", which I think is really good. It's a really good quick reference guide as well, and the fact that it tells you how many pieces you've got there as well.*
>
> *(Student 2-MH, follow up interviews)*

Having this kind of reminder in the e-portfolio made some students feel more confident that nothing had been missed or forgotten in terms of meeting the learning outcomes. It also made them feel greater responsibility and accountability in terms of continuously monitoring and assessing their own progress toward achievement of the learning outcomes, and, where the outcomes had not been fully achieved, they were reminded to rectify this.

> **Students' interviews:**
>
> *It doesn't let anything to fall through the net. So, you wouldn't forget things, because it made you accountable. It keeps you accountable to yourself. You can use it to keep accountable to yourself by looking at it in relation to the modules that you're doing and if you're meeting each module outcome. It is very good thing to hold yourself accountable, have I met that? Have I done that? Have I done that yet?*
>
> *(Student 5-MH, initial interviews)*

However, the students still needed guidance and feedback from their tutors, in reference to the sufficiency and the relevance of their evidence in meeting their learning outcomes. They expected their tutors to also monitor their progress on the

achievement of their learning outcomes and to prompt them when needed.

> **Students' interviews:**
>
> *I think they [tutors] have to sort of look and you know they can sort of say to you when you've not got a piece for such and such learning outcome, try and find some .*
>
> *(Student 2-MH, initial interview)*
>
> *They [tutors] might prompt and say ' this would be good to use as evidence', you can link this to this' and they'll tell you on your online learning.*
>
> *(Student 4-MH, initial interviews)*

8.3.3.2 Allow tutors to monitor students' progress and provide formative feedback

The e-portfolio seems to have provided opportunities for the tutors to formatively assess the students' achievement of the learning outcomes. Some tutors valued the e-portfolio for providing them with an opportunity to easily monitor what evidence the students had submitted for each outcome. This enabled them to assess the relevance and sufficiency of these evidence in terms of meeting the learning outcomes and provide the students with a formative feedback for improvement.

> **Tutors' interviews:**
>
> *I think with this e-portfolio it's easy to see what's going on and what's been put on and as a personal tutor you can go in and see and you can make a statement where you can say to a student "I think you've demonstrated this now, think about the ones*

> *that you haven't" or "thank you for putting this on but perhaps you need to expand this a bit more. You are someway there but it's not quite there yet".*
>
> *(Tutor 1, initial interviews)*

The e-portfolio was favourably compared with the face to face tutorial meeting in terms of its ability to provide more immediate feedback to the students. One of the tutors found the e-portfolio to be a quicker and more flexible method of delivering feedback because she felt that typing up feedback in the e-portfolio would be easier than compiling lengthy of tutorial records.

> **Tutors interviews:**
>
> *I think it adds a bit more structure and hopefully shows that we're taking action to assist them rather than not. But I think it's just a quicker way because you don't have to sit and write reams of notes which we used to have to do when we had extensive tutorials. There's been a tutorial where I have written six pages and my hands almost stopped off whereas if I was typing up it will be a different thing, it will be much much easier.*
>
> (Tutor 3, initial interviews)

The e-portfolio was also seen as a useful way of providing more personalised and focused feedback, based on the students' actual and current learning needs. For example, the tutor quoted below reported that the fact she could see what evidence every student was submitting, enabled her to identify those who might be having difficulty in meeting the learning outcomes and to look into their submissions, identify

the problems and provide them with specific feedback based on their areas for improvement.

> **Tutors interviews:**
>
> *I have got fifteen students in my group. They have submitted their module learning outcomes book thing to me there [in the e-portfolio] for module three and I will get to see whether they have submitted work in terms of meeting learning outcomes. I think it [e-portfolio] help when your students are struggling and you look at their portfolio of evidence in terms of their learning outcomes and you can say to them "what's going on. Why there is only piece of evidence attached to all seven learning outcomes here and what is it that you don't understand". And it can help clarify and be very clear and hopefully enable you to find out what is it that they are missing in terms of their learning.*
>
> *(Tutor 3, initial interviews)*

8.3.4 Allowing for the creation of meaningful connection between evidence

This theme captures how the e-portfolio allowed the students to aggregate and group their individual pieces of evidence together around a particular topic, competency and/or learning outcome and describes how the students used the e-portfolio to make connections between their evidence. It also demonstrates how these connections helped the students to form a meaningful story of their achievement of each learning outcome.

As described by one of the tutors in the following excerpt, the e-portfolio provided the students with a powerful functionality, the tag, which enabled them to create links between different pieces of evidence. She believed that the

evidence/assets the students gathered needed to be linked to each other rather than left as isolated cases. She appreciated the potential benefits of using tags to help the students group and connect different pieces of evidence, by adding a particular tag or theme.

> **Tutors interviews:**
>
> *The other thing it [the e-portfolio] does really well is linking things [evidence]. So, if you tag them it links a few pieces of evidence together. So obviously our students will really like that because it links to a few outcomes… if you put that tag name in it will pull off three or four pieces of evidence that you have uploaded. They aren't [evidence] just listed, it will pull up evidence together. So, I think that will be good for our students.*
>
> *(Tutor 5, initial interviews)*

One of the methods certain students used to connect their evidence was tagging according to the learning outcome. They attached a tag with the outcome's name to each strand of evidence they thought might meet this outcome. Since they were able to add multiple tags to each piece of evidence, depending on the subject they believed each piece of evidence was linked to, this meant that each piece of evidence could appear in different collections, for example, the subject collection or the learning outcome collection. It also meant the students could list all the evidence that belonged to a particular tag (learning outcome or subject) via a simple search using the tag name or by creating a collection of these assets using the tag name. In addition to connecting the evidence together by a particular outcome and/or subject, adding these two tags to each piece of evidence helped the

students to connect each of the learning outcomes with the subject to which each piece of evidence belonged.

> **Students' interviews:**
>
> *I've uploaded different things and tagged them as well into modules learning outcomes. So I am tagging them with the actual modular outcome. The first tag will be the subject, the second tag will be the module outcome and then I can link them like that. So I am trying to work out a map.*
>
> *(Student 5-MH, initial interviews)*

Similarly, the ability to add multiple tags allowed the students to link the work they did in practice to the theoretical parts of the course. For example, a piece of evidence collected from placement could be given two tags. The first tag would be the practice competency this evidence met and the second tag would be the course unit that this evidence could be categorised under.

> **Students' interviews:**
>
> *I started putting all my placement evidence on there as well. Like I said it's placement evidence so it's the competencies that I wanna tag them with. Then I will be putting another tag with unit A, or unit B, or unit C.*
>
> *(Student 2-MH, initial interviews)*

Therefore, tags were viewed as more than just labels attached to the evidence to identify them and group them together. One of the tutors asserted that the process of adding tags to the evidence could also have some educational benefits. For example, it could provide the students with an opportunity to link theory to practice.

> **Tutors' interviews:**
>
> *When you are tagging them [placement evidence], it might make you begin to make some links between the theoretically and practically tagged bits of evidence. So yes I do think it's got some educational benefits.*
>
> *(Tutor 5, initial interviews)*

The same tutor, quoted above, argued that adding tags to evidence might also encourage the students to look at their evidence from a broader perspective. For example, it might stimulate them to think about which part of the curriculum their evidence was linked to, which competencies or learning outcomes it met, and how each piece of evidence was different from or related to other pieces.

> **Tutors interviews:**
>
> *I think it does make you think laterally about your evidence so you are seeing the wider picture if you like, you see it more as an overview rather than maybe you would if it was just in a file and it's all under each. But because you can actually visualise it on pebblepad so I think in that way it makes you begin to think about which bits of evidence may be linked together to meet one specific outcome or can be tagged.*
>
> *(Tutor 5, initial interviews)*

8.4 Challenges and contradictions and in the "Evidencing" activity

The analysis showed that there were two main challenges that the students experienced while carrying out the "Evidencing" activity: difficulties in selecting appropriate evidence, and lack of feedback on the submitted evidence.

These challenges were traced to their root causes through the identification of the contradictions between the components from which they arose. This section is dedicated to describing these challenges and the contradictions that led to them. Table 8.1 summarises all of these challenges and contradictions.

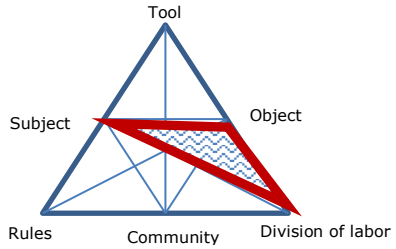
8.4.1 Division of labour related challenges

Difficulty in selecting appropriate evidence

One of the major challenges that several students experienced while carrying out the activity of "evidencing" was a difficulty in selecting the appropriate evidence to meet the learning outcomes. As demonstrated in the excerpts below, several students found it difficult judge whether an evidence was appropriate enough to meet the learning outcomes.

> **Students' interviews:**
>
> *I know what we've got to do in terms of uploading evidence against those outcomes, so I understand that bit. But, what I guess I don't understand really is what counts as valuable evidence,*
>
> *(Student 13-A, initial interviews)*
>
> *They asked me to do something [evidence] while doing the blended learning, I just put it there [e-portfolio]. But, I don't know if it's enough or not for the outcomes and if it's good evidence or not.*
>
> *(Student 7-A, initial interviews)*
>
> *I don't know whether what I've put in here [the e-portfolio] really matches the outcomes or not. I don't know whether this piece of work fully meet everything that is required.*
>
> *(Student 10-A, initial interviews)*

Table 8.1: Challenges and contradictions in the "Evidencing" activity

Challenges		Area of contradiction / sub-triangle	Explanation
Division of labour related challenges	**Difficulty in selecting appropriate evidence**	**Subjects- Division of labor- Object** 	The students (subjects) felt that they had difficulty in selecting the appropriate evidence because they were not receiving enough guidance (division of labour) from their tutors,
	Lack of feedback on the submitted evdience		There was a difference between what the students (subjects) expected and what their tutors perceived their role to be (division of labour). There was a clash between the students' (subjects') expectations and the tutors' perceptions of their role (division of labour) in terms of the provision of feedback on the evidence within the e-portfolio. Some tutors did not perceive their role to be

			that of continuously monitoring what evidence the students were submitting.

The activity analysis showed that the issue of inability to select the appropriate evidence seemed to be a consequence of a contradiction between the subject and division of labour elements in the "evidencing" activity. The students (subjects) felt that they had difficulty in selecting the appropriate evidence because they were not receiving enough guidance (division of labour) from their tutors, as illustrated in table 8.1. As shown in the excerpt below, some students felt that there was a greater emphasis on the technical aspect of uploading and attaching evidence to the outcomes in the e-portfolio rather than on the selection of the appropriate evidence. They were given a written guide that explained the step by step process of tagging their evidence to the learning outcomes in the e-portfolio, but they were not given enough guidance on what counted as a good or appropriate evidence.

> **Students' interviews:**
>
> *The guidelines basically tell you how to do things, how to do an asset, how to upload a pdf or something like that, the instructions, but nobody tells you what you should be attaching to things to meet your learning outcomes, So, I think it's that information more we needed rather than the instructions on how to use it, because you can easily guide yourself around it, that's not hard, pebblepad is not hard, but it's how to do it correctly and if you're attaching the correct things, I think that's the part that's been missed. I think they've put so much focus on how to use it, instruction wise, and they've missed the greater thing of it of actually attaching things because this is the part that's gonna get us through our year one. So I think they needed to maybe change their emphasis on things.*
>
> *(Student 8-A, initial interviews)*

> *I understand that you have to attach things to the leaning outcomes and I know all that but I don't know if I am doing it right. I'd like some guidance on 'yes, you doing it right and carry on the way you going or 'no, you need to do this, this and this '.*
>
> *(Student 7-A, initial interviews)*

The data from the online observations showed that some of the students did not attach evidence to the learning outcomes in the e-portfolio, particularly at beginning of their first year. Their difficulty with selecting appropriate evidence may have resulted in a reluctance to attach evidence to the outcomes due to their fear of doing something wrong. In response to that, one of the tutors, during the interviews, reported that that the students needed to be advised that there was no right or wrong way to demonstrate their achievement of the learning outcomes.

> **Tutors interviews:**
>
> *I think one of the things I'll spend time with my students saying to them is "there is no wrong, there is lot of rights that we can show. There is no real wrong as long as you're engaging with it because even if you'd shared something and it doesn't quite show that you've met the outcomes, it doesn't make you wrong it just means that I'm able to give you feedback and we are able to build on what you can put in, next to show that you have done it" and I think that's important.*
>
> *(Tutor 1, initial interviews)*

Lack of feedback on the submitted evidence

Some students reported that they did not receive feedback from their tutors on the evidence they had submitted and attached to the learning outcomes in the e-portfolio. They expected that their progress toward achieving the learning outcomes would have been monitored and that their tutors would provide them with feedback or, at least, leave a comment.

> **Students' interviews:**
>
> *I've not had any feedback to say you know 'yeah it's going well' or you know 'you got lots of evidence on there, keep going' you know this kind of encouragement or 'I've seen this'. So, I don't know if my personal tutor seen it or not. To be honest, I don't know. But, apparently they meant to be looking at it and see what you doing on there.*
>
> *(Student 4-MH, initial interviews)*
>
> *I have not had anything [feedback]. We submit it [modular portfolio] and as far as I'm aware it is shared with them from the beginning of the year, and if it's not being picked up that we're doing work and stuff, it would be something that they would pick up on, on PebblePad, because nothing's [feedback] being added or anything like that.*
>
> *(Student 2-MH, follow up interviews)*

The activity system analysis revealed that the reason behind this lack of feedback was rooted in a contradiction between the subject and the division of labour elements in the "evidencing" activity. There was a difference between what the students (subjects) expected and what their tutors perceived their role to be (division of labour). As shown in

table 8.1, there was a clash between the students' expectations (subject) and tutors' perceptions of their role (division of labour) in terms of the provision of feedback on the evidence in the e-portfolio. Some tutors did not perceive their role as being a continuous monitor of the evidence the students were submitting. The analysis revealed there were three reasons behind this perception. These reasons are explained below in detail.

The first reason, as one of the tutors asserted, was that the students in this course were adult learners who were expected to be self-motivated and show a considerable degree of independence. Thus, the students were expected to operate independently and be responsible for selecting the appropriate evidence in order to demonstrate their achievement of the modular learning outcomes. She believed that her role was to remind students to upload their evidence by the time of their mid-year tutorial, if they had not already done it, however, she did not see her role as including a daily review of the students' e-portfolio to monitor whether they had uploaded their evidence.

> **Tutors' interviews:**
>
> *I think if I adhered to the philosophy of the course then they should be self-motivated. I mean I can add reminders and email them and say "don't forget to upload your PAR document or don't forget to upload your module learning outcomes" and that I don't see necessarily as my role to be checking on them every five minutes. What I do expect is that when I come to the mid-year kind of tutorial and they haven't uploaded any evidence to their module learning outcomes then I will be chasing them up and say "this is a requirement, if you don't do this then you don't pass and if they're very slow*

> *about it.. maybe they didn't realize that they needed to do it or maybe they misinterpreted what they needed to do. I hopefully give some clarity but I'm not going to chase them up every five minutes because they are adult learners. And I believe that if they want really to become a nurse and really succeed then they will strive quite hard at this course because you have to because it's a hard course. It's very difficult, it's not an easy course and you do have to be motivated to be here already.*
>
> *(Tutor 3, initial interviews)*

Another tutor reported that she felt that it was not necessary to monitor and provide feedback on the evidence the students were attaching to the learning outcomes because these outcomes were already being assessed through other methods such as essays.

> **Tutors' interviews:**
>
> *from a module point of view, the outcomes are already assessed so I don't see why I need, as a tutor, to look at module outcomes in PebblePad if they've already been assessed through the assessment process in term of their essays, or whatever's being marked. So, there's no role for a personal tutor in there, really. All you're doing is giving them a pat on the back and saying "very good, you've got these different assets you've put in". It seems a bit silly to me, to be honest.*
>
> *(Tutor 4, follow up interviews)*

Another tutor reported that students would approach her if they had an issue related to selecting evidence and achieving these modular outcomes. So, if she did not hear from them,

she assumed that they were making good progress and that they could wait until the meeting at the end of the year.

> **Tutors' interviews:**
>
> *There may be something in the course documents that says it is our job to monitor them but what happens in practice is you see them if they have a problem and you see them if they come back at the end of the year. So as personal tutor you have a role in terms of ongoing progress and I tend to work on the basis that if you don't hear anything all is well. If they're okay, we don't hear from them, and if there's a problem, we hear from them, and otherwise it's the end of the year.*
>
> *(Tutor 4, follow up interviews)*

8.5 Summary

This chapter discussed the second learning activity, in which the e-portfolio was a mediator. In terms of this, the e-portfolio was found to be a useful platform because it allowed the students to include a wide variety of evidence to present their learning and create meaningful connections between it. It also allowed them to easily link this evidence to the appropriate outcomes and provided them, and their tutors, with the opportunity to monitor their progress toward the achievement of these learning outcomes. The data analysis revealed, however, that difficulties in selecting the appropriate evidence and a lack of feedback on the submitted evidence were the main challenges affecting some students' use of the e-portfolio as a tool to evidence their achievement of the learning outcomes. The next chapter will discuss the third activity that was mediated by the e-portfolio: reflection on experience.

CHAPTER NINE

Activity 3: Reflection on experience

9.1 Introduction

This chapter presents the third activity that was mediated by the e-portfolio, which was reflection on experience. The data analysis suggested that reflection was an essential activity the students were asked to carry out as a part of their learning on their course. The activity involved the students thinking about their experience, whether at university and/or on placement and analysing their associated thoughts, feelings and actions. This allowed them to express how they felt about a particular experience and helped them to have a better understanding of themselves and their actions in order to enhance their future practice.

Similar to the previous chapters, this chapter starts with a description of the components of the "Reflection" activity system, followed by a discussion of how the e-portfolio mediated this activity. Lastly, the chapter ends with the challenges the students experienced while carrying out the "reflection" activity and the contradictions that caused them.

9.2 Components of the "Reflection" activity system

The activity of "Reflection" was mapped onto the activity system triangle. A graphical representation of this activity system is shown in figure 6.1. The components of this activity system are described below in detail.

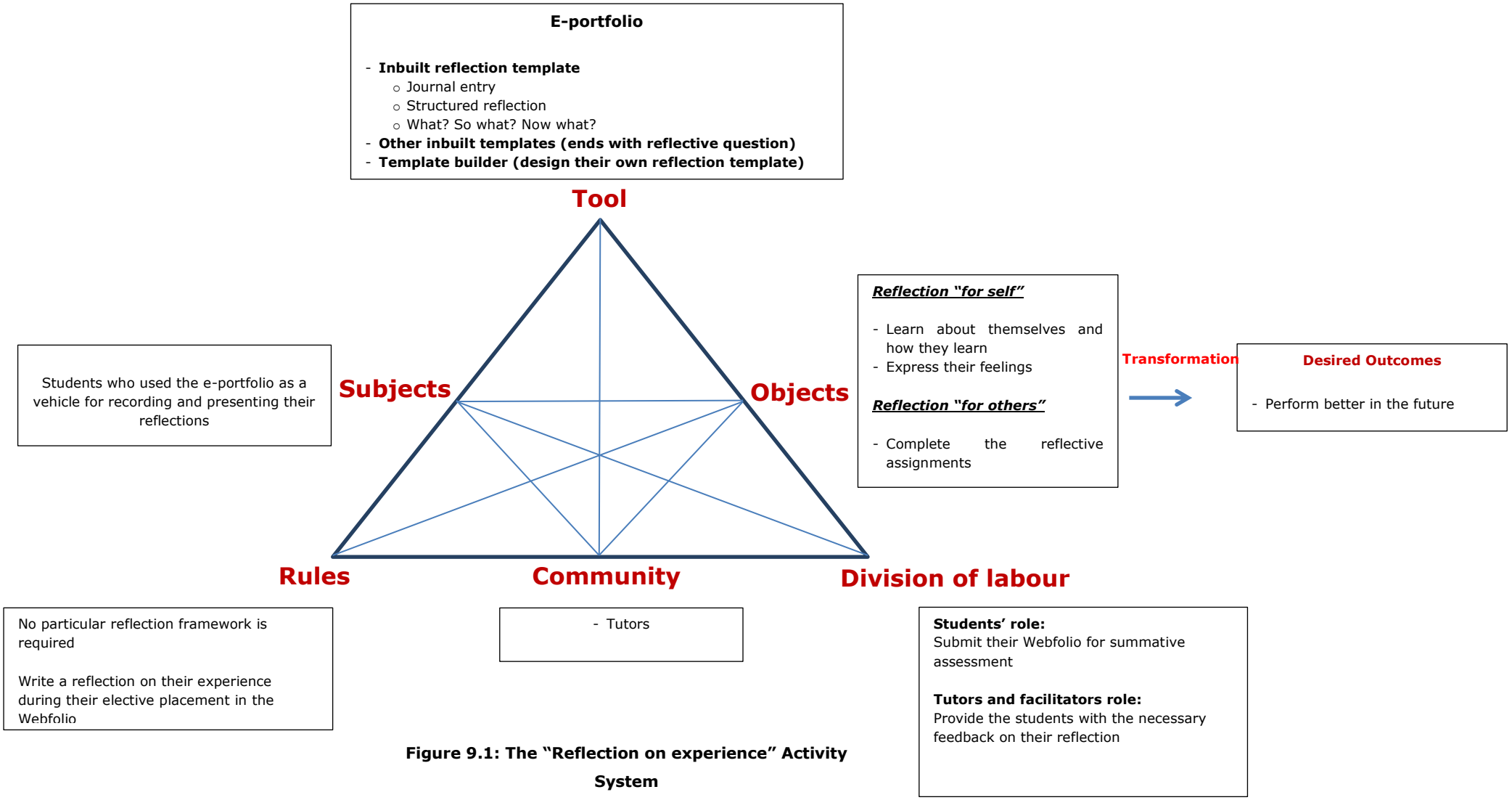


Figure 9.1: The "Reflection on experience" Activity System

9.2.1 Subjects

The subjects are the same fourteen students who were described in chapter 6 (section 6.2.1). In this activity, they used the e-portfolio as a vehicle for recording and presenting their reflections.

9.2.2 Objects

The data analysis suggested that the students were writing reflections either for "self" and/or for "others". Thus, the objects of this activity varied, based on for whom they were doing the reflection. Accordingly, the objects are presented below under these two, main categories: reflection for self and reflection for others.

9.2.2.1 Reflection" for self"

The students reported that they would write a reflection to: (1) learn about themselves as learners and how they learned, and/or (2) express their feelings.

Learn about themselves and how they learn

Some students reported that they wrote reflections to help them understand more about themselves and how they learned. The process of writing a reflection made them think about what had been learned or how much they had learned, in a particular situation. Hence, the process of learning became more visible to them.

> **Students' interviews:**
>
> *I think it make you realize what you have learnt. As you're writing it [reflection] you think "oh, yes, I have learnt quite a lot through this session" or "that made me think about this quite a lot", and as you're writing it out you realise how much you have learnt.*
>
> *(Student 4-MH, follow up interviews)*

Interestingly, one of the students wrote reflections in the form of letters to herself. In these letters, she wrote about herself as a learner, appreciated her achievements and how she had progressed from one year to another in the course and then sent it to herself. An example of what she wrote to herself in one letter can be seen in the following excerpt:

> **Students' interviews:**
>
> *I tend to write letters to myself quite a lot as well. I plan on doing a series. I wrote one last year, I wrote one this year, I'm going to write one next year, and then my final year as I'm ready to graduate, and it's basically looking at the progress as the year's gone on. So last year it was a letter to myself as I was getting my exam results for my A levels, basically saying, "You never thought you'd get here. You've done really well. These are the kinds of things you've been doing this year and this is the kind of feedback that you've been getting. Don't worry, everything's going to be fine, try not to stress too much." And then this year I've written to myself as I was last year, saying, "Okay, well you did this and you've gone on to do this. You didn't quite manage to do this but you've done it in other ways."... It's more of a motivational pep talk thing and it is very emotive, very raw, and almost completely unedited.*
>
> *(Student 2-MH, follow up interviews)*

Express their feelings

Some students mentioned that they wrote reflections because of their therapeutic effect. Reflection allowed them to express their feelings, especially when they encountered challenging situations. They found it a safe outlet that helped them to gain a deeper understanding of these situations and disperse the emotional load that they caused.

Students' interviews:

I think if it's challenging situations or if you come across something emotional, like a death, or if you come across a hurdle with a patient and you thought that you could come across it and beat that challenge but you didn't, I think that's when it helps to reflect.

(Student 14-A, follow up interviews)

I did a reflection on this one (one of her assets) because in our clinical skills we had to brush each other's teeth which is a very strange experience for me because I've never had anybody else brush my teeth. So, I did a reflection on that purely because it's good to be the other person, to be the patient. So, I did a reflection on that and they didn't ask us to but I decided that it's good to reflect on later on. So I've just tried to do as much as I feel.

(Student 8-A, initial interviews)

9.2.2.2 Reflection "for others"

In this type of reflection, the students were writing for the purpose of showing others that they had completed the reflective writing assignments

Complete reflective writing assignments

Completing the reflective assignments was one of the purposes that motivated that students to carry out the reflection activities, as demonstrated in the following excerpts.

Students' interviews:

It's [reflection piece] a blended learning that we have to do. It has a deadline by December 10th. So, I've done it.

(Student 11-A, initial interviews)

> *This is a reflection that I have done, again when I've been asked to do.*
>
> *(Student 13-A, initial interviews)*

9.2.3 Desired Outcomes

Several students reported that written reflection would ultimately enable them to "do better in the future" by allowing them to view their current experience from different angles, learn from it and, therefore, develop in new ways, in the future.

> **Students' interviews:**
>
> *I think I come to terms with what like to be a good nurse. I think already I can see the value of reflection because like I say you can go into a situation you could have really good experience with a patient or you can really probably have a bad experience with a patient and by reflecting on that experience you can learn for the future. So, no one needs to sell that to me. I understand reflecting on those experiences will help me to do better in the future.*
>
> *(Student 13- A, initial interviews)*
>
> *It's important to be able to learn new things, progress as a person. If you felt something or you didn't agree with something, reflecting on that and looking at different possible outcomes and leave this didn't work then reflecting on it, in the future I will do this better.*
>
> *(Student 8-A, initial interview)*
>
> *When practicing you might do something wrong and you can reflect on it, that's not how you should do that. So you do that in a different way in future.*
>
> *(Student 12- A, initial interviews)*

9.2.4 Tool

The e-portfolio system appears to have been designed to have the necessary functionality to encourage and guide the students in writing reflections. It comes with inbuilt reflective templates that are specifically designed for promoting and recording reflection.

9.2.5 Community

The community in this activity comprised the same eleven tutors who were described in the initial activity. Please refer to chapter 6 (section 6.2.4) for more information about them.

9.2.6 Rules

The data analysis showed that activity of "reflection" was governed by the two following rules (please refer to section 6.2.6 in chapter 6 for more details about these rules):

No particular reflection framework is required: if a piece of reflective writing was an assessed assignment, the student might be asked to use a model of their own choice to structure their reflection.

Develop a Webfolio of reflections related to the elective placement: The students had to write a reflection on their experience during their elective placement and explain how they managed to achieve each of their chosen leaning outcomes.

9.2.7 *Division of Labour*

The data analysis revealed that the following were the roles and responsibilities of the students and tutors in the "evidence" activity (please refer to section 6.2.7.2 in chapter 6 for more details about these roles):

Students' roles and responsibilities

- Submit their Webfolio, after completion, to the institutional "assessment" space in the e-portfolio for summative assessment.

Tutors roles and responsibilities

- Provide the students with the necessary feedback on their reflection.

9.3 The benefits of the e-portfolio as a mediator for the "Reflection" activity

The analysis of the data identified three themes that described the benefits of the e-portfolio as mediator for the reflection activity. These themes indicate that the e-portfolio was valuable as a platform for promoting retrospective reflection, scaffolding students' capacity for reflection and for opening up possibilities for different formats of reflection. Each of these themes will be presented below in further detail.

9.3.1 Promoting retrospective reflection

The first theme that emerged from the data was the role of e-portfolio in promoting retrospective reflection. This theme captures the way, according to the students, the e-portfolio facilitated the process of looking back at their repository of work, allowing them to revisit and reflect on their earlier work. It appears that the e-portfolio was used as more than just a collection of the students' work. Their work was not simply uploaded there and forgotten about, rather, it was frequently revisited and revised by the students throughout the year. Therefore, the e-portfolio provided the students with a dynamic platform where they were able to engage in an iterative process of continuous self-assessment and reflection. Several students appreciated the electronic nature of the e-portfolio, because it

allowed their work to be stored and organised in one place, therefore looking back at it and re-editing it was made easier.

> **Students' interviews:**
>
> *I think what I've found quiet easy is that I can look at what I've uploaded and then I can kind of go and edit them, view them and reflect back on them. That's quite easy.*
>
> *(Student 3-MH, initial interviews)*
>
> *I like that it's there and it's organized, you can view it, you can edit it, you can also go back and edit stuff. It's not just once you've done that's it, you can go back and edit things.*
>
> *(Student 4-MH, initial interviews)*

Moreover, the electronic nature of the e-portfolio made it simpler for the students to continuously revaluate and update their work and re-work their materials in the e-portfolio in order to improve it and add more meaning to it. As demonstrated in the following excerpt, the ease of editing encouraged one student to re-write her reflection on a particular piece of work. That stimulated her to think and move beyond just a simple description of a particular piece of work or of "what happened" in a particular situation, to a deeper level of reflection in which she explained "how" she had created this piece of work and how she made sense of what she had learned from it.

> **Students' interviews:**
>
> *I kind of keep going back to things and re-editing them. Like with this one, my physical obs one, rather than just go 'oh', this is an obs chart, I go into more details about it saying you know why we take physical observations, how it's done, stuff like that.*
>
> *(Student 2-MH, initial interviews)*

Moreover, the students asserted that looking back over their early work was worthwhile because it also allowed them to revisit any feedback that had been given. That, in turn, provided them with the opportunity to re-engage with this feedback and potentially initiate an online dialogue in the e-portfolio where they could exchange comments with the feedback provider. This idea is articulated in the following excerpt from one of the students.

> **Students' interviews:**
>
> *Yeah it is good that you can also go back to it [one of her reflections] again to read the comments that have been made. If you want to write or you want to comment on it or you want to refer to it you can easily go back to it again.*
>
> *(Student 11-A, initial interviews)*

From analysing the students' actions on the e-portfolio, it was clearly evident that several students were engaging in the process of looking back at their work and modifying it over time. Although I had no access to the work in their asset store because of the privacy settings, I was able to access the work they had submitted to the workspace. The print screens below demonstrate examples of students' submissions; it was a reflection on learning styles (figure 9.2). Looking at both the submission date and the date the work was modified by the students indicates that they were able to revisit their work and make some changes, even after its submission, on the e-portfolio. In addition, any change the student made to this work was automatically updated on the workspace, so that their tutors always had access to the latest version of their work.

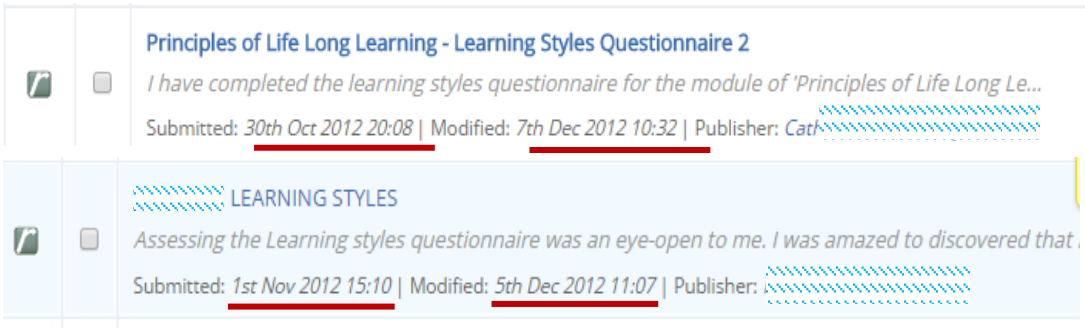


Figure 9.2: Examples of work submitted to the workspace by students 8 and 11, respectively

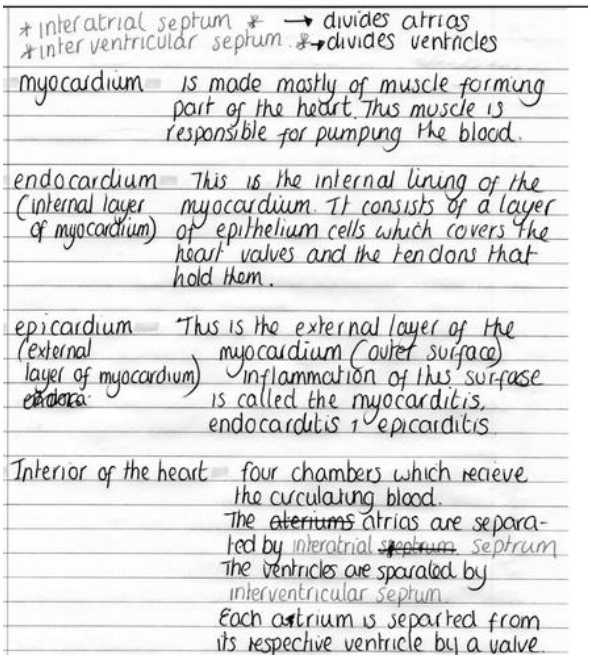
The students appreciated that, using the e-portfolio, they were able to retrospectively reflect on their work and alter it at any point, even after submission. The process of reflecting back on a previous piece of work might allow the students to discover any errors in their writing or gain new insights that could help them to do things differently. For example, the student quoted below realised, only after submitting her reflection to the workspace, that she needed to remove the patient's name or anything that could identify the patient's identity from the reflection in order to protect the patient's confidentiality. The ability to edit the work on the e-portfolio at any time allowed her to fix this issue.

> **Students' interviews:**
>
> *Sometimes I'll have to stop and think, rather than actually putting patient names and stuff, then there is a time when I'm like "no, I have to sit here and think of a suitable pseudonym, one that I've not used before, one that wasn't the name of anybody on the ward or on a caseload or anything like that", because otherwise it looks like I'm writing about them when I'm actually not. So it depends on what I'm writing as to whether there's a lot of emotions and feelings involved or less, and what I want to show with that particular piece.*
>
> *(Student 2-MH, follow up interviews)*

The ability to retrospectively reflect on the e-portfolio was not exclusively used as a means of looking back at previous reflections and other work products. Students were also able to revisit the lecture notes they had uploaded to their e-portfolios. It is worth noting that the multimedia nature of the e-portfolio allowed the students to scan their notes and store them in their personal asset store. Continuously referring back to these notes helped them to refresh their memories and develop new or deeper understanding of the topics they were reviewing. The students found this to be beneficial for their understanding of the subject matter.

> **Students' interviews:**
>
> *I can also go back to it [lecture note] again if I forgotten something, so I can go back again and read again may be for an exam or for a test, or if I'm going to the ward I want to read about how to do the vital signs again. I can go back and read again because I've read it before.*
>
> *(Student 11-A, initial interviews)*
>
> *We had like lectures… like my notes on my lectures. So, after the lectures I had to make my notes during lectures then upload them to PebblePad [the e-portfolio system] throughout that process, then I can go back in the future to that notes.*
>
> *(Student 9-A, initial interviews)*

The following is a print screen of some lecture notes that were shared in one of the students' e-portfolios (figure 9.3). Student 10 scanned her notes and uploaded them to her e-portfolio.


* interatrial septum * → divides atrias
* inter ventricular septum * → divides ventricles

myocardium — is made mostly of muscle forming part of the heart. This muscle is responsible for pumping the blood.

endocardium (internal layer of myocardium) — This is the internal lining of the myocardium. It consists of a layer of epithelium cells which covers the heart valves and the tendons that hold them.

epicardium (external layer of myocardium) — This is the external layer of the myocardium (outer surface) inflammation of this surface is called the myocarditis, endocarditis / epicarditis

Interior of the heart — four chambers which recieve the circulating blood.
The ~~ateriums~~ atrias are separated by interatrial ~~septum~~ Septum
The ventricles are sparated by interventricular Septum.
Each atrium is separted from its respective ventricle by a valve.

Figure 9.3: lecture notes

The multimedia nature of the e-portfolio also helped the students to add a visual element to their work, for example attaching pictures to their reflections, notes or to any other learning products. Incorporating a visual element to written materials can maximise the effectiveness of the process of retrospective reflection. This is because it can stimulate the process of recalling any information, thoughts and feelings associated with these materials. Apparently, this seemed to be of benefit for the students, particularly those who were visual learners, when they were reflecting back on their earlier work.

> **Students' interviews:**
>
> *As a visual learner I normally go back to those reflections and work I have written on PebblePad, those lectures [notes] I've uploaded on my PebblePad. So, I go back and read most of those*

> *writing that I uploaded; most of the time had pictures to it. So, seeing those pictures really sometimes helps a lot in my learning.*
>
> *(Student 9- A, initial interviews)*

9.3.2 Scaffolding students' capacity for reflection

This theme describes how the design of the e-portfolio assisted the students in writing their reflection, by taking into consideration the students' needs and capacity in terms of reflection. It also captures how the features of the e-portfolio were varied in order to suit the students' different reflective styles and preferences and, finally, how it helped them to progressively upgrade their reflective skills from one level to another.

During the interviews, several students referred to the benefits of the inbuilt reflective templates in the e-portfolio as a means of assisting them with writing their reflection. The templates were frequently mentioned as well-designed tools that made the reflection easier and more structured. Apparently, the students liked the idea that the templates contained questions that prompted them to think about their experience and helped them to start writing reflectively. The following excerpts from the students' interviews articulate nicely how the templates were valued by many students:

> **Students' interviews:**
>
> *Like now when you are doing reflection, there is a template already for reflection which makes it easy for me. So, I just go on the template, because there is "what, so what, now what?" [one of the reflection templates] So with that it helps me to construct what I have to reflect on…so the template is already*

there "What? So what? And now what?". So, with this you know what you write.

(Student 11- A, initial interviews)

It is easy to do the reflection because they [e-portfolio templates] put already questions for you to answer, examples of questions you can answer for each reflection. So, now it saves me the time to think about what I will put. So, for this point of view about the reflection I think it's easy for me, I just read the questions and I just remember my experience that I did, so I think it's easy.

(Student 13- A, initial interviews)

They [inbuilt reflection templates] were good. So, you didn't have to keep thinking of what to do. You don't have to think what to do next, it was all structured for you. So, yeah I did like the Idea.

(Student 8-A, initial reflection)

It [the reflection template] has helped me because, firstly, it's handy. It's there, which is very easy for me to use, because sometimes you might just be using your laptop, your computer, and while on PebblePad you might just remember, "Oh yes, let me do some kind of a reflection of this." All you have to do is to click the template and it comes up and you start writing, rather than probably wasting time looking for paper and pen to write or whatever. So it's easier whereby the questions, as I said before, are straightforward.

(Student 9-A, initial reflection)

One of the students believed that the questions in the inbuilt reflection templates were deeper and much better at enhancing

their reflective ability than the random questions that they would have thought of themselves.

> **Students' interviews:**
>
> *They [e-portfolio system] have like a set of reflection tools. So, it will give you like a set questions and that kind of enhances your ability to reflect because it's asking you questions so you thinking about the answers which kind of aid reflection rather than thinking "okay, what I've learned, what I've done" and just kind of not know where to start. Having that framework on there is quite very useful.*
>
> *(Student 3-MH, initial interviews)*

The same student, quoted above, attributed the effectiveness of the templates in enhancing their reflective writing skills to the idea that the questions in the templates had been scientifically tested by experts, thus they were "evidence based". Therefore, for her, the templates were proven to be effective as guidance in writing her reflection and, accordingly, creating effective action plans.

> **Students' interviews:**
>
> *The reflection tool it kind of gives you a basis and gives you set questions to kind of be able to really make an action plan and know that you are making an effective action plan. You're not just setting yourself with questions and not knowing whether they are the right questions or the wrong questions. These are kind of probably evidence based questions to help form an effective action plan.*
>
> *(Student 3-MH, initial interviews)*

Furthermore, one of the curriculum planners observed an improvement in the students' reflective writing skills in their second year. She too, attributed this to their use of the inbuilt reflection templates in the e-portfolio, because they provided the students with an appropriate theoretical structure that facilitated the process of reflection.

> **Curriculum planners' interviews**
>
> *There's been an improvement in the reflections, quite considerably. Obviously they're second year students and you'd expect some improvement, but they're thinking more about the process and I'm getting more and more convinced that it is because we're using the templates. It does offer a structure. I have some students now that are starting to adapt their own template, so they've added things into the template and added their own little headings as they go through, which is absolutely fine because that's innovation. So the templates are there as a guide not as a be-all and end-all because it is there for them to demonstrate what they've achieved.*
>
> *(Curriculum planner 4, follow up interviews)*

The e-portfolio system "PebblePad" provided the students with different types of reflection templates that ranged from highly structured to less structured formats. This variety appeared to be designed to meet the students' needs and satisfy their different reflective styles. The students used different templates for different purposes and in different situations because it was up to them to choose the template. Allowing the students to choose the template that would best meet their needs was another way to scaffold their capacity to reflect.

> **Students' interviews:**
>
> *It's [the e-portfolio] got one [template]where we can just have literally a blank kind of document and you can just flow and just write your thoughts down*

> *and it's actually got another one [template] where it's more structured. So, I've actually used both, so there's been times when I have been like I'm not quite sure about the structure, I just wanna get a stuff done and I've just done it that way. But I have also got an option of having it more structured and I've actually found you know when it is structured it helps, you know when you kind of like you wanna just get it done and if I wanna just not linger too long on it. I wanna just gets the main points of my reflection and I've used the structured and it's really helped. So yeah, I find it useful.*
>
> *(Student 4-MH, initial interviews)*

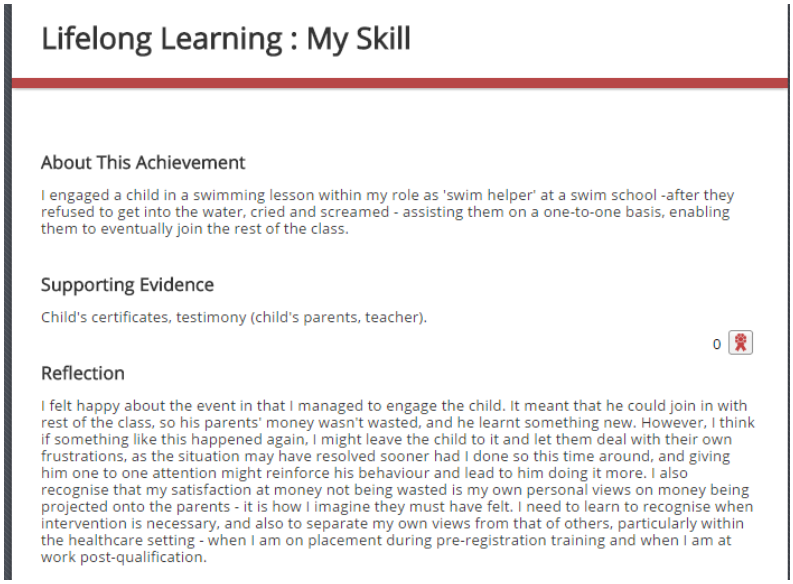
> *I think I've used two different ones [templates]. There's one where you've got the "Why? What?", you know, the questions and answers. There's one that's just a blank notebook kind of thing in there, which you just write your own freeform reflection. So I think I've used both of those styles depending on what mood I'm in and if I just want to do the "Why? What? When?" or if I just want to free-think it and just write what comes to my mind.*
>
> *(Student 4-MH, initial interviews)*

> *I like the way it's structured…the reflection was good because you had a choice of a few reflections [templates] you could use "what? So what? So what now?", and then a more detailed one, which was good.*
>
> *(Student 8-A, initial interviews)*

From the data from the online observations of the e-portfolio, it was clear that students varied in the forms they used for writing

their reflection. For example, several students alternated between the use of the inbuilt reflection templates and merely word processing programs for their written reflections. They also alternated between the use of highly structured and less structured formats for reflection. However, the template "What? So what? Now what?" seemed to be the most popular and frequently used template amongst the students. On the other hand, there were a few students who used these templates only when they were instructed to in the blended learning activities. In these cases, the majority of their reflections were written in word documents. It is worth noting that this observation is based on the reflections the students submitted to the workspace or attached as evidence of learning to the learning outcomes in the modular learning outcome document in the e-portfolio.

The online observation also revealed that, besides using the inbuilt reflection templates, several students used other templates for recording their meetings, plans and achievements. They answered the reflective questions that were located at the end of each of these templates. The following print screens were taken directly from some students' e-portfolios (figures 9.4 and 9.5).



Lifelong Learning : My Skill

About This Achievement

I engaged a child in a swimming lesson within my role as 'swim helper' at a swim school -after they refused to get into the water, cried and screamed - assisting them on a one-to-one basis, enabling them to eventually join the rest of the class.

Supporting Evidence

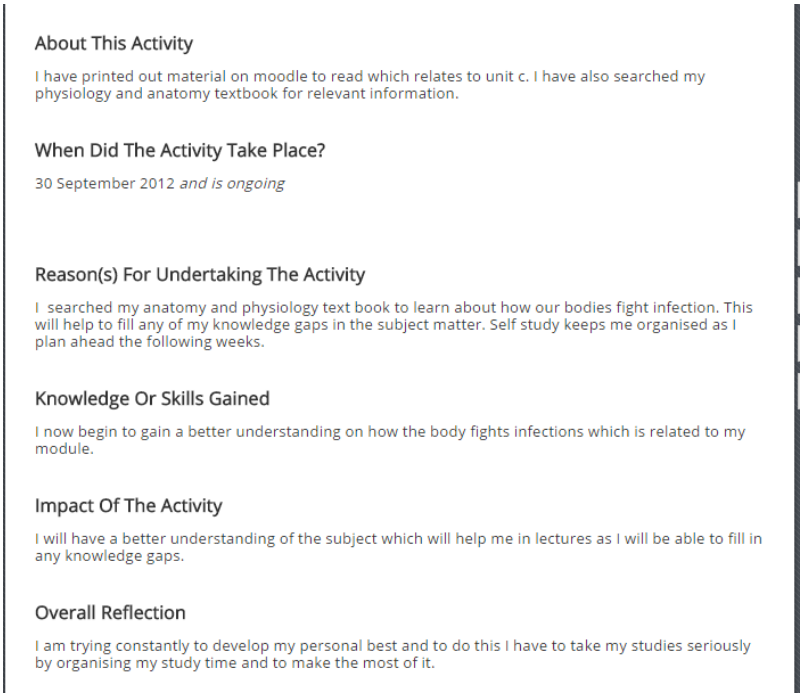
Child's certificates, testimony (child's parents, teacher).

0

Reflection

I felt happy about the event in that I managed to engage the child. It meant that he could join in with rest of the class, so his parents' money wasn't wasted, and he learnt something new. However, I think if something like this happened again, I might leave the child to it and let them deal with their own frustrations, as the situation may have resolved sooner had I done so this time around, and giving him one to one attention might reinforce his behaviour and lead to him doing it more. I also recognise that my satisfaction at money not being wasted is my own personal views on money being projected onto the parents - it is how I imagine they must have felt. I need to learn to recognise when intervention is necessary, and also to separate my own views from that of others, particularly within the healthcare setting - when I am on placement during pre-registration training and when I am at work post-qualification.

Figure 9.4: reflective comment (Student 2, MH)



About This Activity

I have printed out material on moodle to read which relates to unit c. I have also searched my physiology and anatomy textbook for relevant information.

When Did The Activity Take Place?

30 September 2012 *and is ongoing*

Reason(s) For Undertaking The Activity

I searched my anatomy and physiology text book to learn about how our bodies fight infection. This will help to fill any of my knowledge gaps in the subject matter. Self study keeps me organised as I plan ahead the following weeks.

Knowledge Or Skills Gained

I now begin to gain a better understanding on how the body fights infections which is related to my module.

Impact Of The Activity

I will have a better understanding of the subject which will help me in lectures as I will be able to fill in any knowledge gaps.

Overall Reflection

I am trying constantly to develop my personal best and to do this I have to take my studies seriously by organising my study time and to make the most of it.

Figure 9.5: reflective comments *(Student 10, A)*

9.3.3 Opening possibilities for different formats of reflection

This theme relates to how the multimedia nature and the online environment of the e-portfolio opened up possibilities for recording reflection in different ways. Before introducing the e-portfolio, the students had been using paper based portfolios to record their reflection. This type of portfolio limited the students' choices to written reflection. It was hoped that introducing the e-portfolio would give rise to more creative ways of recording reflection that would provide greater motivation for the students to record their reflection and arouse the tutors' interest in reading it. This idea is well explained in the following excerpt from the tutors' interviews.

> **Tutors' interviews:**
>
> *These paper-based portfolios get messy and start falling apart. I suppose it can be quite boring to read and to get through them, but may be in pebblepad it will retain students and tutors' interest because you can do different things and it maybe that will enhance their motivation and creativity in reflecting on their learning and producing good assets.*
>
> *(Tutor 11, initial interviews)*

The data analysis showed that the students used multimedia elements such as photos, mind maps and hyperlinks alongside, or even without the use of written text, as a means of presenting a reflective narrative about their experience.

Photos

The idea of visual reflection seemed desirable to several students. They appreciated that the e-portfolio provided them with the opportunity to add pictures to their written reflection in order to make it more visually appealing to their readers. They also believed that "a picture is worth a thousand words", therefore having pictures alongside their written text was considered to be very helpful, as it would allow them to tell their story and deliver their message to the audience in fewer words than would have been possible in a paper portfolio.

> **Students' interviews:**
>
> *You can put pictures and make it [Webfolio] more visual because it was mostly marked on how you reflect and evaluate what you've done. I think that is a much handier format than a paper one for that kind of reflection because you've got so much to put in there and it'd be quite tricky to organize it all into a paper file.*
>
> *(Student 1-MH, follow up interviews)*

The data from online observation of the students' Webfolios revealed that the majority of the students used pictures mostly from their placements and placed them within their written text in order to support their reflection about their elective placement experience. The pictures and the written text in their Webfolios provided a digital story about them. After reading the students reflection and looking at the pictures in the Webfolio, it can be implied that these pictures were used to serve different purposes and to provide additional dimensions to the experience. For instance, some of the pictures were used to provide details about the environment in which the experiences

took place. It would have been difficult to present all these details in a written format only. Other pictures seemed to have been used simply to reinforce the message that was being presented in the written text, while others may have been added to make the reflection more visually attractive. Another instance in which pictures seemed to have been used, was to demonstrate how the student had learned a particular skill or procedure during their placement. For example, some students used pictures of them with other members of the nursing staff on their placement when they were reflecting on the development of their communication skills. As there was no limit of the number of photos the students could use in their reflection, the number of pictures used by different students varied. The following are print screens of some photos that were integrated into textual reflection, taken from the Webfolios of various students (figures 9.6 and 9.7).



As a part of early and late shifts routine I participated in ward rounds taking general observations such as temperature, pulse, blood oxygen level and blood pressure.

The thermometer and pulse oximeter were similar to the ones used in the UK. Only manual sphygmomanometers were used on the ward so that I had plenty of practice measuring blood pressure manually.

Routinely respiration rate was not measured in contrast to the National Early Warning Score practice. I learned how to record the observations on the computer (image on the left) and also made evaluation notes about the care delivery and patient's progress (see scan of the digital patient's record print out).

Figure 9.6: Using pictures (Students 6-A)

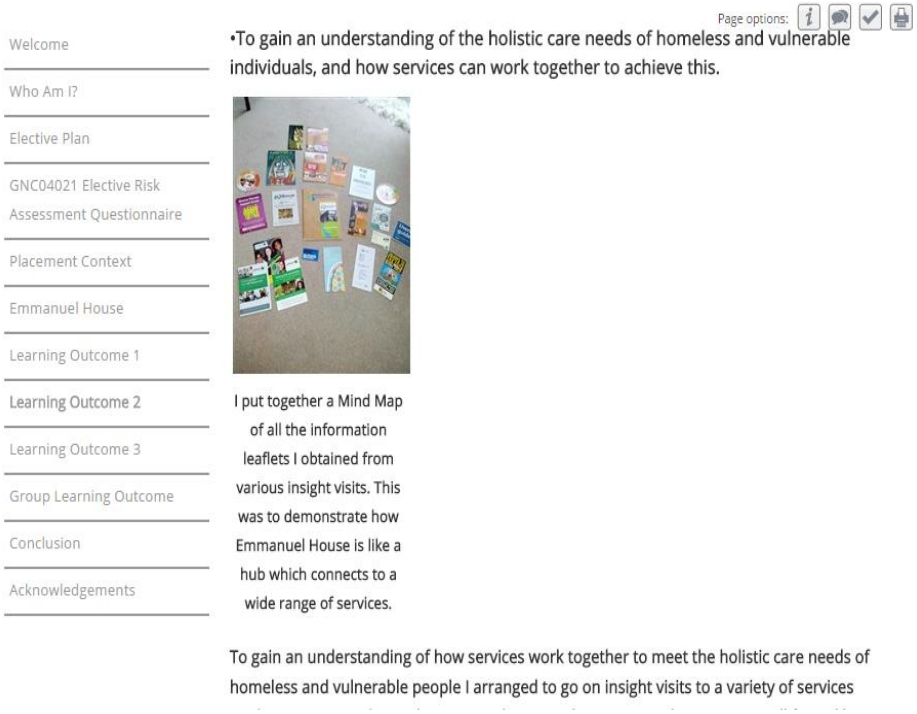


Figure 9.7: Using pictures (Student 4-MH)

Mind maps

In addition to using photos, some students used mind maps as another form of reflection. They considered mind maps to be a more creative way of reflecting on their experience. One of the students used a mind map as part of her reflection process as a starting point, in order to write down and categorise her thoughts and feelings about the experience before starting to write up her reflection. Later the mind map would be scanned and uploaded to her e-portfolio.

> **Students' interviews:**
>
> *I like referring back to pictures or photos or diagrams, or just something to break up the text. If I'm planning assignments or reflections or something I'll usually do a mind map and just have something visual so I can start turning that into text. I suppose they could be part of the webfolio if I was going to scan them and upload them.*
>
> *(Student 1-MH, follow up interviews)*

In reviewing the format of the reflections the students submitted to the workspace or attached as evidence to the learning outcomes on the e-portfolio, it became evident that mind maps were one of the chosen formats. These maps were generated either with pen and paper or with software programs, as is illustrated in the print screens below (figures 9.8 and 9.9). The map that was created using pen and paper was scanned and saved as a PDF file and uploaded to the e-portfolio. Clearly, the content of this handwritten map could not be edited or modified as it was saved as an image. On the other hand, the map that was created using software was saved in in a file that allowed the student to edit and modify their reflective map at any time. Whether electronic or handwritten, it could be seen that creating mind maps allowed those students to graphically break down their experience into elements and then identify the links between these elements. Neither student attached any written reflection to these maps.

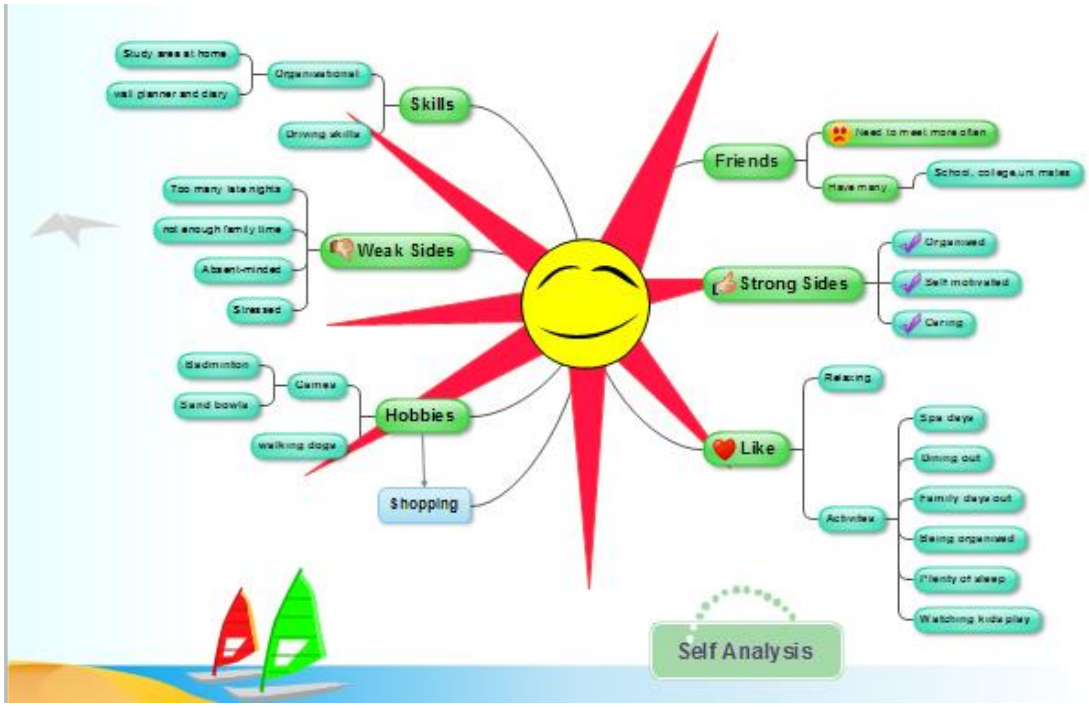


Figure 9.8: Mind Map *(Student 7-A)*

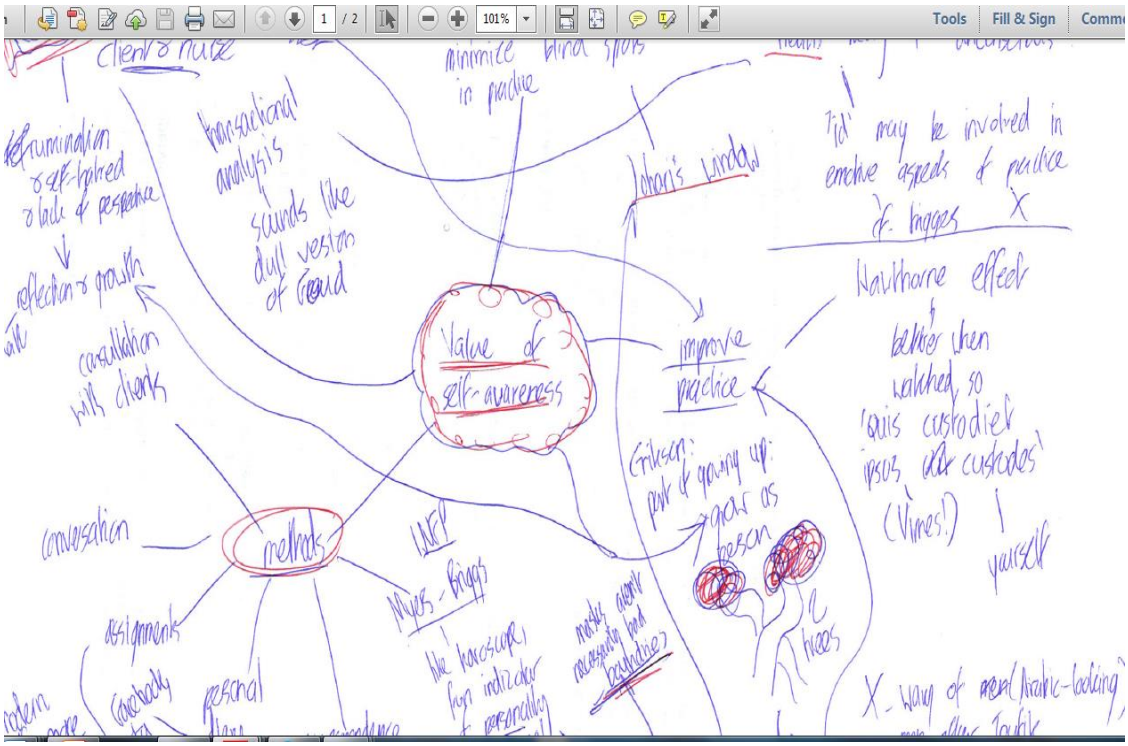


Figure 9.9 Mind map *(Student 1-MH)*

Links

The data analysis suggested that hyperlinks were another form of writing and supporting reflection. The Webfolio structure and functionality allowed the students to add hyperlinks within their written text to direct the readers to other documents in their e-portfolio.

The students appreciated that these hyperlinks allowed them to link their current reflection on the elective placement with their previous reflections or any prior work in their e-portfolio. It allowed them to direct the reader to other pieces of work where they might be able to obtain additional information and gain greater understanding of the context in which the current situation was situated.

> **Students' interviews:**
>
> *These links [in the Webfolio], they will take you back to the reflections I've done. You see, the way to do these links is quite easy because it will link*

> *you back to everything you've done, especially reflections. You don't want to have everything just on the box because it will look very boring, very, very boring. If you have a link, you have to click and go to that link to another page and view something else, it's quite a bit more intrigue. I would use the word, very intrigued, in the sense that the effort leads to the effort, do you know what I mean?*
>
> *(Student 9-A, follow up interviews)*

The online observation revealed that the students created two types of hyperlinks: the first type was links to (assets) in their e-portfolios such as previous reflections or scanned documents collected from placements. The second type was links to external resources on the internet such as YouTube, the NHS, and the Independent (i.e. news articles). After reading their reflections and clicking on the hyperlinks the students had used, it can be concluded that they used the hyperlinks for several reasons. For example, sometimes they were used to create greater engagement between the reader and the reflection by directing them to click on the hyperlink for additional information that could be found in other assets/document in their e-portfolio. Others sometimes used it to link their reflection to a previous reflection in order to show that they had had a similar experience. In other cases, they used it to back up their reflection with evidence by directing the reader to some documents and materials they had collected on their placement. Finally, some students used it, on occasion, to show where they had gained knowledge about a particular topic or issue, therefore they added hyperlinks to external resources on the internet such as the Resuscitation Council UK or the NHS website. The following are print screens that were taken from

the students Webfolios to show the different types of hyperlinks the students used (Figures 9.10, 9.11, 9.12, 9.13, 9.14)

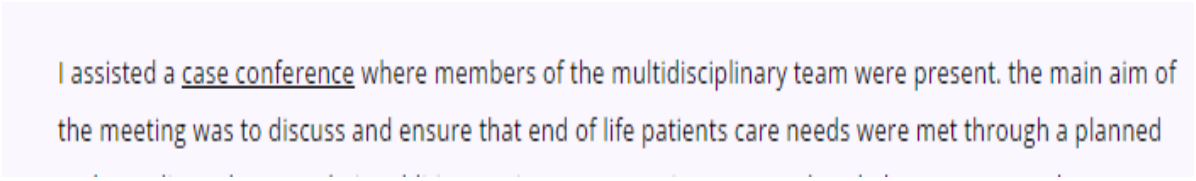


Figure 9.10 hyperlinks (Student 7-A)

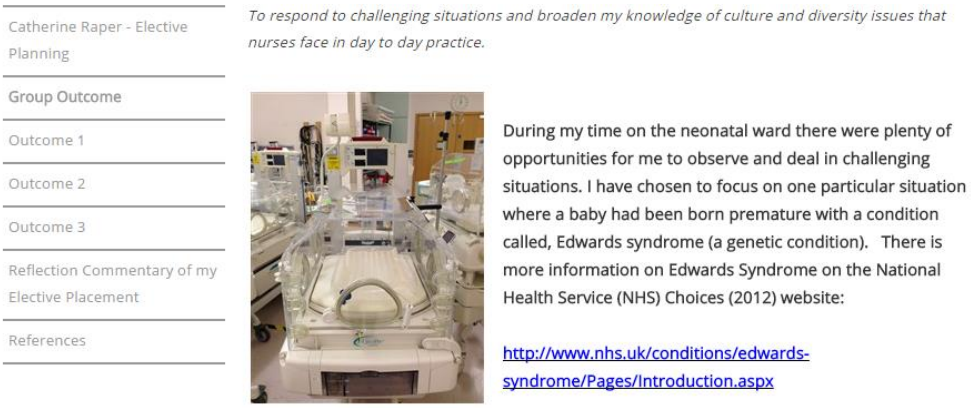


Figure 9.11 hyperlinks (Student 8-A)

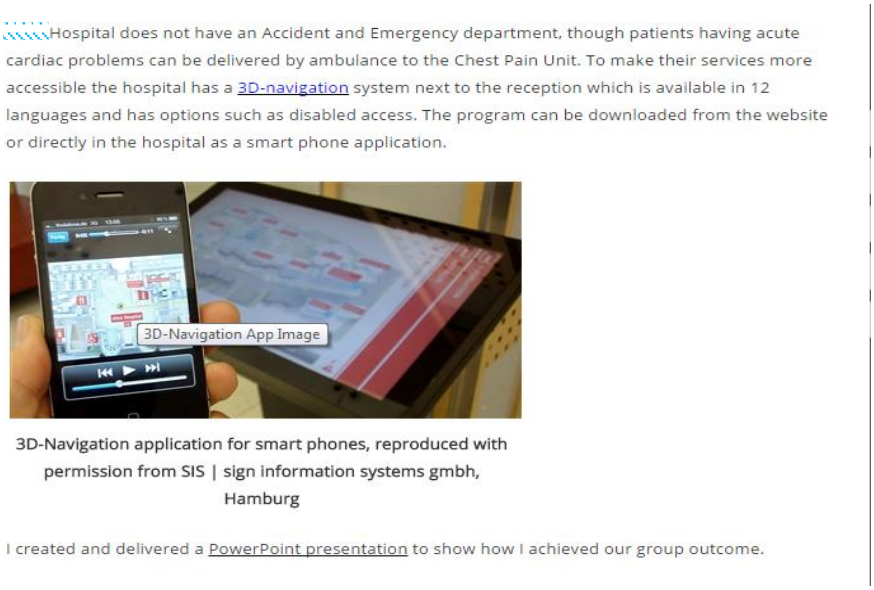


Figure 9.12 hyperlinks (Student 6-A)

At [redacted] prison drug, violence and gang cultures become the norm and raise constant issues for healthcare staff. Often the nurse is the nearest available person that the prisoners can reach out to in times of emotional distress. I used a non-judgemental approach this is important and somewhat challenging being in this environment. Nurses must be able to remain professional and fair whilst offering support, immunisations and vaccinations, emergency first aid and making referrals. Some of the services that I witnessed and worked with are the Integrated Drug and Alcohol Team (IDAT), mental health team and the Assessment, Care in Custody and Teamwork (ACCT Plan). The mental health team assessed the prisoners spiritual needs during discussions around their life and the purpose of life. There were times when the prisoners needed quiet time to think about their life and what is the way forward for them. The prison has a chapel on site where the prisoners can prey at certain times of the day to maintain their spiritual health and wellbeing.

(Please click for reflection)

Figure 9.13 hyperlinks (Student 10-A)

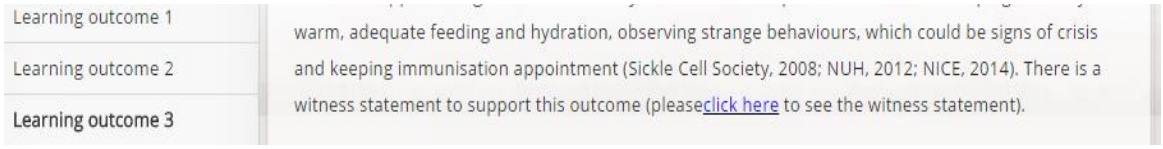


Figure 8.14 hyperlinks (Student 11-A)

9.4 Challenges and contradictions in the 'Reflection' activity

The analysis showed that there were four main challenges the students experienced while carrying out the "reflection" activity. The first was that audio recorded reflection felt unnatural to them, the second was the difficulty of recording immediate reflection on the go, the third was struggling with structured reflection and the fourth was struggling with writing reflection. These challenges were traced to their root causes through the identification of the contradictions between the components that caused them. This section is dedicated to describing these challenges and the contradictions that led to them. Table 9.1 summarises all of these challenges and contradictions.

9.4.1 Subject related challenges

Audio recorded reflection was unnatural

As mentioned in the previous section, the e-portfolio allowed the students to record their reflection in a variety of formats. This encouraged the students to think about audio recording their reflection instead of merely typing it. Initially, the idea seemed very promising to them and they believed it would generate notable advantages over the more traditional method of written reflection. They believed audio recording reflection, if used, would make the reflection faster and less time consuming than if they typed it.

> **Students' interviews:**
>
> *Maybe it's [recording reflection] faster. It's actually a good idea because you talk faster than you write. Isn't it? Then if I had to do some like written reflection afterwards I could listen to the tape and then do. I believe I will become a nurse and I will have to do a reflection from time to time then it will save me time.*
>
> *(Student 6-A, initial interviews)*
>
> *I think that would be really good actually, because I did write a reflection on a particularly difficult shift that I'd done, and I talked to my best friend about it, and she read my reflection and she said, "But when you just talked to me about it, it was a lot more interesting." So you could say a lot more.*
>
> *(Student 1-MH, follow up interviews)*

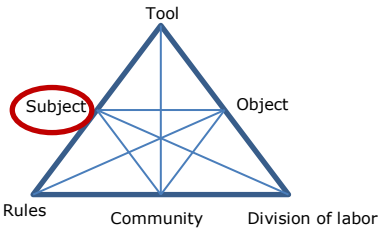
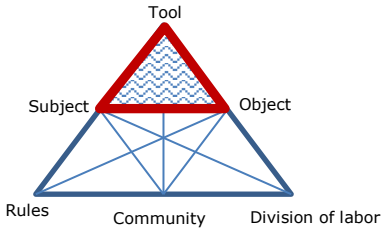
Despite the aforementioned advantages, none of the students ever recorded their reflections in any audio format or uploaded such reflections to their e-portfolio. This was evident both from the online observations of their portfolios and from their comments in the interviews. The analysis of the "reflection"

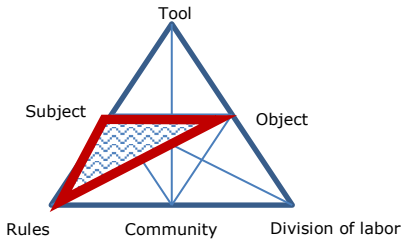
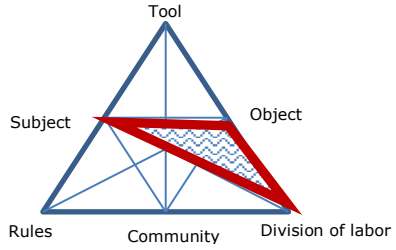
activity system revealed that the lack of audio recorded reflection was rooted in a contradiction within the subject element, as shown in table 9.1. The first reason behind this was that many of the students felt nervous being recorded, and hence, could not speak openly. The student quoted below reported that, when she tried to audio-record her reflection, she found it unnatural. Knowing that she was being recorded made her feel uncomfortable and unable to express herself freely.

> **Students' interviews:**
>
> *Yes, I've tried it [audio recording reflection]. I think normally, though, if I'm thinking out loud, if I'm talking to someone and reflecting, I can do that really well, but then if someone records me, if I know I'm being recorded, actually I'm a bit nervous about this, then I find it a lot more difficult to speak freely.*
>
> *(Student 1-MH, follow up interviews)*

The second reason that made them hesitant to audio record their reflection was related to other people who might be involved in the audio recording. Reflection on an experience could take the form of a reflective discussion between the students and their mentors. The student quoted below felt that asking her mentor to record this discussion might make her feel uncomfortable and consequently she might act differently to usual.

Table 9.1: Challenges and contradictions in the Reflection activity

Challenges		Area of contradiction / sub-triangle	Explanation
Subject related challenges	**Audio recorded reflection felt unnatural**	**Subject** 	Their feeling of nervousness about being recorded prevented them from audio recording their reflection. They felt uncomfortable and therefore unable to express themselves freely.
Tool related challenges	**Difficulty with recording immediate reflection on the go**	**Subjects- Tool- Object** 	This contradiction occurred because a few students (subjects) did not have access to their e-portfolio on their mobile phones to record some reflection (tool), due to system incompatibility issues. The mobile version of the e-portfolio appeared either to work poorly, or to be incompatible with some mobile phones.

Rules related challenges	**Struggling with structured reflection**	**Subjects- Rules- Object**  	This contradiction occurred when some students (subject), who preferred a freer reflection style, were asked to use generic models or bespoke templates of their choice (rule) to complete one of the reflective writing assignments.
Division of labor related challenges	**Struggling with writing reflection**	**Subjects- Division of labor- Object**  	Some of the students (subjects) struggled with written reflection and using the reflective templates in the e-portfolio due to a lack of guidance from their tutors (division of labour).

> **Students' interviews:**
>
> *It kind of seems a bit stilted, actually. "Shall we repeat all of that?" It doesn't quite have the same effect. I'm not sure how other people would feel if I said, "I'm just going to have a reflective discussion with you and I'm going to record it and it's going to be part of my evidence." I'm not sure how they would feel about that. "Oh, she's going to use me as part of her evidence. I'm going to change what I say", or anything. Or would they not? Would they be different? And I'd want them just to be able to have a conversation and talk stuff through.*
>
> *(Student 2-MH, follow up interviews)*

9.4.2 Tool related challenges

The difficulty of recording immediate reflection on the go

The data analysis indicated that some students were frustrated about being unable to immediately record their feelings and thoughts in a particular situation in their e-portfolio. The students thought that the e-portfolio, being web-based, would allow them to immediately access their work and record their reflection on the go, but, unfortunately, this was not always possible. The activity system analysis showed that a contradiction between the subject and the tool elements in the activity led to this limitation. As illustrated in table 9.1, this contradiction occurred when a few students (subjects) were not able to access their e-portfolio on their mobile phones to record some of their reflections (tool) due to system incompatibility issues. The mobile version of the e-portfolio appeared not to work well with or to be incompatible with some mobile phones. For example, the student quoted below, who had an internet-enabled mobile phone, tried to log in to her e-portfolio to record

some reflection on the go but, unfortunately, the system did not work well on her mobile phone. Instead, she used the notes function on her phone, or Microsoft Word to record her reflections, which turned out to be easier and more convenient than the e-portfolio.

> **Students' interviews:**
>
> *But actually I've preferred to do mine [reflection] in Microsoft Word or on a Notes application on my phone, usually on the way back from placement, or just talk to people about it, rather than using PebblePad, because I find those other forms more convenient, especially if I'm doing stuff on my phone because I can't really access PebblePad on my phone. I can log in to it but it's very fiddling and tricky, whereas if I'm making a note on my phone I can just start typing straight away and it's very quick.*
>
> *(Student 1-MH, follow up interviews)*

The fact that the e-portfolio did not work well on all mobile phones made it challenging for some students to immediately record their reflection whilst on placement. With the limited availability of computers on placement, the students found it easier to write notes on paper to take home, where they would be able to write up a fuller reflection.

> **Students' interviews:**
>
> *I think when I go home, and I probably what I will do, I am gonna probably get like a diary or like a journal and then I will probably make notes at break times if I don't forget. And then I will go home and probably I will write it in full and then type it on using a structure or something like that to type it on pebblpepad.*
>
> *(Student 4-MH, initial interviews)*

One of the students reported that even if the mobile version of the e-portfolio had been compatible with and was working well on their mobile, finding a free Wi Fi internet connection to access their e-portfolio was not always possible. To avoid forgetting their thoughts, this student also wrote down their notes on paper and waited until they get home.

> **Students' interviews:**
>
> *I think I will probably use paper. It's just easier to scribble down your thoughts because you can do it on a bus, you can do it on a train, you can do it anywhere, whereas finding the internet and finding access to get to do it, you have to wait to be at your home and your immediate thoughts and reflections might change. So, I probably will write them but then type them up when I get home.*
>
> *(Student 8-A, initial interviews)*

9.4.3 Rules related challenges

Struggling with structured reflection

Although the idea of being given prompts and having structured reflection frameworks was valued by several students, it seemed to be less appreciated by others. They found that being given precise directions concerning what should be written and how it should be presented tended to be too directive, restricting their independent thinking about their own experience and making their writing fragmented and less coherent.

> **Students' interviews:**
>
> *I'd rather have freestyle because then you're just completely writing about your own experience, whereas if it's too structured you won't always get*

> *everything down that you want to do, what you want to say in your reflection.*
>
> *(Student 12-A, follow up interviews)*

> *I am not being used to being given prompts. I've just been kind of used to having my own ideas and going from there… I have like a really disjointed writing style if I am asked to like answer a really simple question that should normally be the easiest thing in the world. So, I kind of feel a bit hold back by that.*
>
> *(Student 2-MH, initial interviews)*

This struggle with structured reflection was found to be caused by a contradiction between the subject and rules elements in the activity of "reflection". This contradiction occurred when some students (subjects) who preferred a freer reflection style were asked to use generic models or bespoke templates of their choice (rules) to complete one of the reflective writing assignments (please refer to table 9.1). They believed that these structured templates limited their ability to write about their experience in their own way. As mature students, they wanted to be given the opportunity to devise their own style and structure for recording their reflection and expressing their feelings.

> **Students' interviews:**
>
> *I think you should just be able to reflect on how you want on your own style because people write differently, people feel and see things differently and these headings that they've given us " What, so what and now what" is not really. It doesn't guide you very well*

> *I just think, we're university students, we don't need this, I think we should be able to just write what we want to write a reflection. They could maybe hint like give us like an actual structure on how to write a reflection but be able to do it our own way in a word document.*
>
> *(Student 12-A, follow up interviews)*

9.4.4 Division of labour related challenges

Struggling with written reflection

Some students, apart from anything else, seemed to still be struggling with the concept of written reflection. They found reflection to be more difficult and challenging than any other form of academic writing, such as essays. This may indicate that not all students are naturally reflective.

> **Students' interviews:**
>
> *Writing reflection is strange to me, it's different from writing academically and everything but we have to reflect. You'll be thinking it's not academic, you know? So I was struggling.*
>
> *(Student 11-A, initial interviews)*

Despite the availability of the various reflection templates in the e-portfolio which they could use to help them with their reflection, they still struggled to write. The fact that it was their first time using the inbuilt reflection templates in the e-portfolio meant they did not know how to use them well and they were unsure as to whether they were adequate for producing a good piece of reflection. As result, they struggled with using the templates as well.

Students' interviews:

In the mandatory learning when it's asking you to reflect, is it good enough just to use the reflection templates that are already on PebblePad or do you have to use a model? Nothing is really given to you that explained that. But, I presumed because it's in PebblePad you can use that with reflections. The template is good but you don't know if you are using it correctly or if they wanted something a bit more in-depth.

(Student 8-A, initial interviews)

The activity system analysis revealed that this struggle may have resulted from a contradiction between the subject and division of labour elements in the activity. As shown in table 9.1, the students (subjects) were struggling with writing reflection and using the reflective templates in the e-portfolio due to a lack of guidance from their tutors (division of labour). On the other hand, some tutors responded to this complaint by saying that they had never been approached by any student asking them about which reflection template or model to use. They added that it was up to the students to choose which, if any, of the inbuilt reflection models in the e-portfolio they used for writing their reflection.

Tutors interviews:

I haven't had anybody come to me and talk about that. No, they haven't. And I think maybe they could use those reflective models [on the e-portfolio] for their evidence in practice, which might help them, so they might actually do the evidence in PebblePad and print it off for their mentor. So they might be using it that way, I don't know. I couldn't say, but if they have the framework there they might use it. (Tutor 3, follow up interviews)

Interestingly, one of the tutors responded to the same complaint about students lacking guidance on the reflection templates, by admitting that she had not been aware of the availability of these templates in the e-portfolio.

> **Tutors interviews:**
>
> *I didn't know we had reflection templates so that's news to me. So they've got reflection templates in PebblePad now, then? You know, what they [the school] should have done, I think, is do a little session, open session, telling people about that.*
>
> *(Tutor 4, follow up interviews)*

9.5 Summary

This chapter discussed the third learning activity for which the e-portfolio was a mediator: "reflection on experience". The e-portfolio was found to have a supportive role in offering the students a means to facilitate and scaffold the reflective process. It promoted the process of retrospective reflection and encouraged the students to look back at their work. Moreover, it scaffolded the students' capacity for reflection by providing them with a range of reflective templates. Furthermore, it allowed the students to use multimedia reflection. However, four challenges were found to have affected the students' use of the e-portfolio as a tool for record reflections. These challenges were: that they found audio recorded reflection unnatural; the difficulty of recording immediate reflection on the go; struggles with structured reflection, and struggles with the concept of written reflection in general. The next chapter will focus on the discussion of the key findings of the study.

CHAPTER TEN

Activity 4: sharing work with others

10.1 Introduction

This chapter presents the fourth activity incorporated into the e-portfolio, which was: "sharing work with others." According to the data analysis, sharing work with others was an optional activity unless the students were required to share particular pieces of work for assessment purposes. The activity involved the students selecting various pieces of their own work to share with other people, both from within and outside the university, for a variety of purposes.

This chapter starts with a brief description of the components of the "sharing" activity system. The following section discusses how the e-portfolio mediated this activity. The final section focuses on the challenges the students experienced while carrying out the "sharing" activity and the contradictions that led to these challenges.

10.2 The components of the "Sharing" activity system

The activity of "sharing" was mapped onto the activity system triangle. A graphical representation of this activity system is shown in figure 10.1. The components of this activity system are described below in detail

10.2.1 Subjects

The subjects of this activity were the same fourteen students who were described in chapter 6 section (6.2.1). They used the e-portfolio as a tool for submitting or sharing their pieces of work with other users such as personal tutors and peers.

10.2.2 Objects

Analysis of the students' interviews suggested that the students engaged in the sharing activity for a variety of reasons. These reasons ranged from voluntary sharing of work without being asked, in order to *update tutors concerning progress and to receive feedback,* to mandatory sharing of work in order to *provide evidence of task completion*. Each of these reasons is explained below.

Updating the tutor with their progress

The students felt it was essential to keep their tutors continuously updated with their own progress and achievements as part of the course. They believed that one way to communicate such updates was by sharing some of their work with their personal tutors. They believed that by sharing examples of their work, their tutors might get to know to know them better and, consequently, could make sure that they were on track in terms of their progression on the course.

> **Students' interviews:**
>
> *I think I like the fact that I can share things with my tutors and kind of keep them updated… I sent these [some of her work] to [tutor's name] who is my personal tutor so that she can see how I am progressing as her personal student, so she can see that from my progression… I hope that they're seeing them and just kind of making their own kind of mental notes of just seeing how I am progressing and getting on…So, I'll attach say my reflection, say I will go out on a community visit, so do like my reflection but then I'll also kind of additionally put it into my PebblePad just to show it to my tutors, just to keep them updated with how my evidence collection from my placement is going as well.*
>
> *(Student 3-MH, initial interviews)*

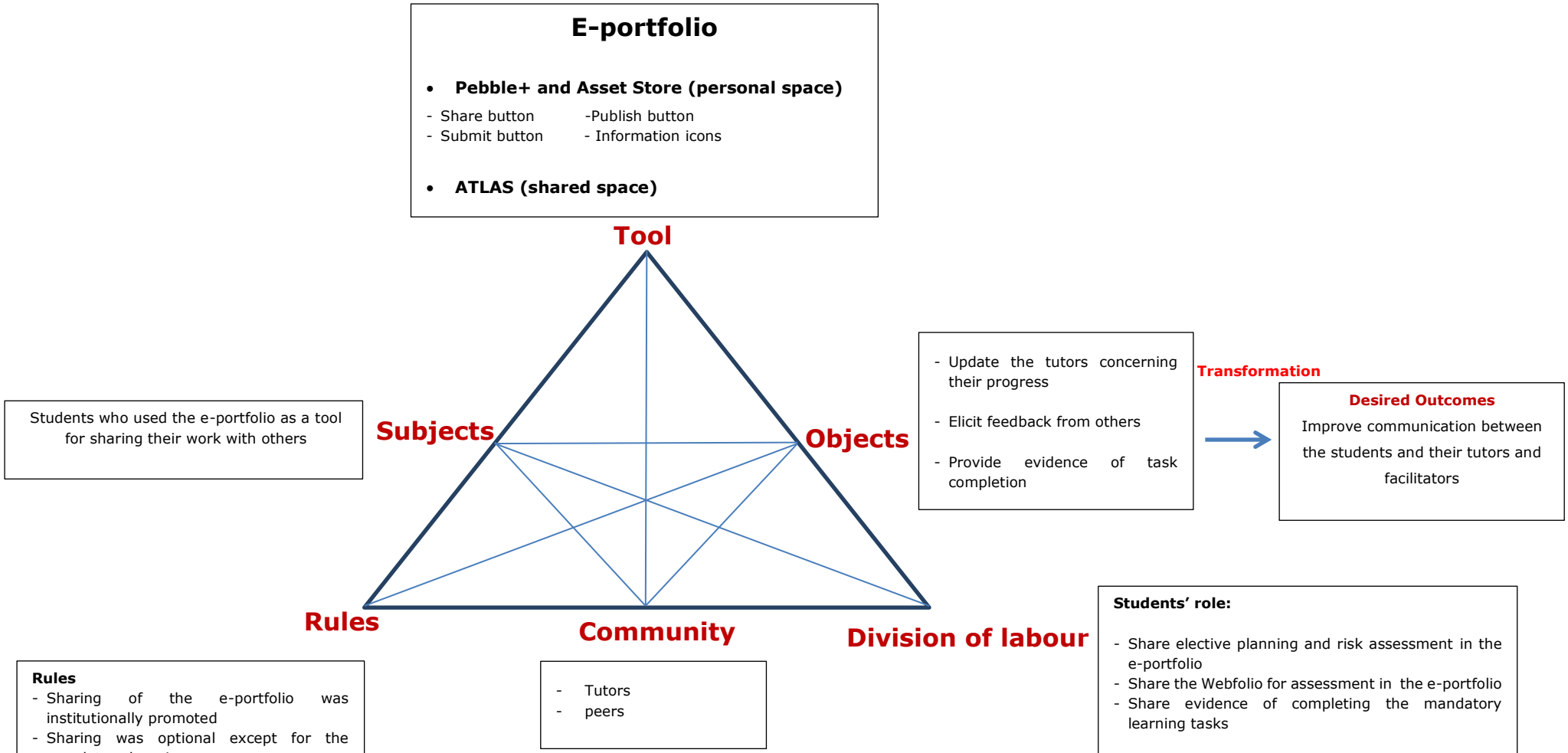


Figure 10.1: The "Sharing work with others "Activity System

Eliciting feedback from others

The students believed that having constructive feedback on their work could help them in many ways, such as assisting them with their development on the course, improving their work and ensuring that they were progressing in the right direction. They believed that they could invite feedback from their tutors if they shared their work with them in the e-portfolio.

> **Students' interviews:**
>
> *I know you're meant to have feedback when you do stuff and I think my personal tutor is meant to be looking at my whole of my Pebblepad [e-portfolio] and looking at what I am not doing and sort of seeing my progress… If you shared something and then got feedback quickly that would be great.*
>
> *(Student 4-MH, initial interviews)*
>
> *Sharing things is useful because you can get other people's opinion on it and what they think and what they think might need to be changed and what they think is good. I like having other people's opinion on stuff. It's quite like go and say 'is this Okay?' and then badger people until they get me an answer.*
>
> *(Student 2-MH, initial interviews)*
>
> *I prefer it just everybody to see what you're doing so that you can kind of gauge if you're going in the right direction or not, because I could get to the end of the year and been going a long like I am and I've done it completely wrong.*
>
> *(Student 8-A, initial interviews)*

Providing evidence of completion of the mandatory tasks

The students also shared their work with their tutors for the purpose of providing evidence that they had completed the online learning packages and other mandatory learning tasks.

> **Students' interviews:**
>
> *I think it's just a quiz that I've done of one of the journals and I've just scanned it and uploaded it on PebblePad to show that I've done the work and that I've done some study.*
>
> *(Student 10-A, initial interviews)*
>
> *Most of those [evidence] once I've uploaded I've shared with my personal tutor as well, so that she can have a look of what I have been doing or what I've done.*
>
> *(Student 9-A, initial interviews)*

10.2.3 Desired outcome

The expected outcome of the "Sharing" activity, as identified by both the subjects and the community, was to improve communication between the students and their tutors. The e-portfolio was expected to help the students achieve this outcome, by acting as a structured platform for facilitating communication and inviting collaboration and feedback.

> **Curriculum planners' interviews:**
>
> *I think the added value is communication and it is a lot easier to have structured communication between the tutors and the students.*
>
> *(Curriculum planner 4, follow up interviews)*

> **Students' interviews:**
>
> *It's kind of communication method and a framework which is quite good. (Student 3-MH, initial interviews)*

10.2.4 Tool

The e-portfolio system (PebblePad) offered some functionalities that were specifically designed to allow the students more control over the content of the e-portfolio and over what could be shared with others. Moreover, the system offered further functionalities to the teaching staff to allow them to have access to any work shared with them by their students and, therefore, to provide them with prompt feedback. Please refer to figure 10.1 for examples of these functionalities.

10.2.5 Community

The community involved in this activity included the tutors with whom the students shared their work. They did this, in order to provide an update on their progress within the course, provide the tutors with evidence of their completion of the mandatory learning tasks, and, finally, to request feedback. The community also included their peers, with whom the students shared their work in order to gauge their opinions and request feedback.

10.2.6 Rules

The data analysis indicated that the activity of "reflection" was governed by the following rules (please refer to section 6.2.6 in chapter 6 for more details about these rules):

- ***Sharing was optional***, except for the mandatory learning packages and other mandatory learning tasks.
- ***Adherence to confidentiality guidelines*** when sharing work with others. Any information that could have revealed the identity of a specific placement or individual had to be removed or masked.

10.2.7 Division of labour

The data analysis revealed that in the "Sharing" activity, the following were the roles and responsibilities of students and tutors, respectively. Please refer to section 3.2.7.2 in chapter 6 for more details about these roles.

Students' roles and responsibilities

- Submit the mandatory documents, such as the risk assessment questionnaire, elective plan and Webfolio to the institutional "assessment" space on the e-portfolio.
-

Tutors' roles and responsibilities

- Encourage the students to share their work and learning with them.
- Monitor what the students had shared with them
- Provide the students with the necessary feedback on their shared work.

10.3 The benefits of the e-portfolio as a mediator for the "Sharing" activity

The data analysis revealed that the web-based nature of the e-portfolio possessed the potential to allow the students to share their work with other people, both from inside and outside the university. The data analysis revealed that the main benefit of the e-portfolio, in terms of this activity, was that it allowed the students to have control over sharing their work with others. This benefit will be discussed below in greater detail.

10.3.1 Allow students control over sharing

This theme captures the role the e-portfolio played in ensuring that the students had control over what they shared, with whom, and for what purpose. The analysis of the interview data and the content analysis of the students' e-portfolios revealed that the built-in features within the e-portfolio allowed them to have control over the content to be shared, decide upon the audience with whom they wanted to share, and identify their audience's level of involvement with the shared work. For example, some might choose to allow others to view only, while others might allow for collaboration and/or comment. Below is a detailed analysis of this theme.

10.3.1.1 Control over the content to be shared

Several students in this study reported that the e-portfolio offered them the opportunity to control which parts of their story they exposed to others and which parts would remain private in their Asset Store. Having such control provoked them into thinking more carefully about their work and allowed them the autonomy to decide which pieces of work were ready to be shared with their tutors. The following excerpts from the students' interviews provide examples of how such control was highly valued by the students.

> **Students' interviews:**
>
> *It's a nice that I can choose what I submit and don't submit. So, it's nice it kind of you've got a control over what you wish to submit and what you feel is most appropriate to submit, because there are some things that I don't submit because it isn't seem necessary to submit them whereas other things I'll submit them because if the tutor could just see these when they choose*

> *to, it would be quite helpful for their understanding as tutors really.*
>
> *(Student 3- MH, initial interviews)*
>
> *I like that idea [having a private space] and that's what I was using it for. I've been keeping notes and stuff and some reflections on the private bit and then sharing some stuff with my tutors. So I did like that aspect of it and if I need to share anything I can share with my mentor and tutor.*
>
> *(Student 1-MH, initial interviews)*

The tutors also appreciated that the students had their own private space that no one could see without their permission. Therefore, it was up to the students to decide, first of all, whether or not to share and, secondly, to select the content to be shared. For instance, the students might have had some personal reflections containing sensitive information about themselves or about others. In these cases, the students had the right to keep these reflections private and in order to protect their own privacy. Therefore, several tutors stated that they valued the benefit that the private space on the e-portfolio afforded the students in terms of allowing them to take the charge of their own learning and be in control over what to share with others.

> **Tutors' interviews:**
>
> *There is certain capacity to have stuff in portfolio that you wouldn't necessarily want to share with your personal tutor or your peers and I think that's perfectly reasonable. I think some of these things are personal reflection and such like and not everything needs to be in the public domain, some of it is for them and may be that when they go back and look at it or develop it they*

may then choose to share it in the public domain. Portfolio is part of them and their development and that's not always something they want to share.

(Tutor 9, initial interviews)

I don't have a problem between the personal and the public divide, that's fine. I'm not a control freak really. I would go and get away from that point of view of having to want to see everything. I think it's the students right to let me know what they want me to see and I will comment on them otherwise how they gonna develop and grow academically and personally.

(Tutor 6, initial interviews)

10.3.1.2 Decide upon the audience

Several students reported that the e-portfolio also allowed them to define the audience who would be able to view their work, as well as to set the level of involvement they wanted this audience to have. For example, they could allow the audience to read only, or they could allow them to comment on and/or edit and collaborate with them. Moreover, other features within the e-portfolio gave the students the choice of sharing things privately with particular individuals or submitting them to the workspace in ATLAS, where only authorized individuals, such as their named tutors and facilitators, could see them.

Students' interviews:

When I have shared it's sometimes by a name and then sharing to workspaces. So for the elective it was to the workspace. When we were practising with PebblePad it was very much, "let's share with this person and this person", "let's send messages".

(Student 2-MH, follow up interviews)

> *I think those were the ones I shared them, I think actually went in by name and shared it with that particular person.*
>
> *(Student 13-A, initial interviews)*

The e-portfolio did not place any restrictions on with whom the students could share their work. Rather, its electronic nature allowed them to share it with a wide variety of people. For example, they were able to share individual pieces of their work or aspects of their e-portfolio with an audience from the university (such as tutors and other students) and an audience from outside the university (such as potential employers, family and partners). The following section will describe how the e-portfolio was shared with these types of people.

Sharing with tutors

The tutors appeared to be the main audience with whom the students shared their work. The sharing features of the e-portfolio enabled the students to use it as a communication tool with their tutors. Sometimes, the busy schedule of both the students and the tutors and the fact that students were often on long placements made it difficult for them to arrange face to face meetings. Therefore, many of the students believed that one way to stay connected with their tutors was by sharing some of their work with them, using the e-portfolio. The reason for this, was that it would enable the tutors to monitor how they were progressing on the course, in terms of observing whether they were on track and whether they had completed the required tasks and then provide them, as necessary, with feedback for improvement.

Students' interviews:

I can see it as a valuable tool to be able to communicate with my tutors and share my work with them. Just like when they log on, they can see what I've been up to, just to kind of assess if that I'm actually doing the work, how I'm working as an individual learner and what I've learned from the actual lectures and seminars… It's [e-portfolio] also quite useful because I think especially whilst you are on your placement you're not really in contact with your tutors, you might be out on placement for like eight weeks and not seeing them. So, on placement they can just kind of log on and see how I am doing on placement. It's just kind of another way of communication… I hope that they're seeing them and just kind of making their own kind of mental notes of just seeing how I am progressing and getting on.

(Student3-MH, initial interviews)

It was nice and it's a good form of communication as well to get a feedback and comments from your personal tutor.

(Student 11-A, initial interviews)

The students seemed to have taken the full advantage of this opportunity and they used their e-portfolio to share some of their work voluntarily. They shared anything they thought worth sharing with their tutors. In addition, they used their own judgment to select the pieces of work to share that best represented their own 'learning' story. The following excerpts from the students' and tutors' interviews show examples of what work the students shared in the e-portfolio and why they chose to share it.

Students' interviews:

You're not asked to submit things to your tutors but I like to do that anyway, because if I was like a tutor I would want the students to just submit things to me just kind of keep them in the loop really… We did like a SWOT analysis which is like the strengths, weaknesses, opportunities and threats towards my learning. So, I've kind of just did that and I uploaded it to my personal tutors as well as my course tutor could see what I've identified as those different topics. Just that they can see me as individual learner and how I am as an individual learner and student.

(Student 3- MH, initial interviews)

I submitted my learning style, just not everything anyway, just a few bit I want to submit anyway. I submitted them because they are vital in the sense that they are very vital to the aspect of nursing or related to my particular clinical skill.

(Student 9-A, initial interviews)

Tutors' interviews:

Sometimes from skills sessions, I got students shared, for example, how they felt about, let's say, their hygiene session, so learning how to wash a patient, and it might be that this person has never seen a naked person before or they have no idea how to wash somebody lying in bed. And I've had some students reflect on how that made them feel, and what it felt like to have somebody else brush their teeth, and wash their hands and feet, and that type of thing

(Tutor 3, follow up interviews)

Furthermore, the privacy element in the e-portfolio encouraged the students to share non course related materials with their tutors. For example, one of the students, who is quoted below, shared one of her personal reflections with her tutors. This reflection contained very personal and sensitive information about her life, such as her personal and career interests, and her medical history, which included mental illness. She felt that it was essential that her tutor should know her, not only as a student, but also as a person. This personal reflection was kept private in her Asset Store within the e-portfolio until she decided to share it individually, and privately, with her tutor.

> **Students' interviews:**
>
> *I've shared things about my history and recovery because I have actually had mental illness myself. So, that's quite important to me I've put that about my own interest, my career, important people and places to me and other things about me like I want to go into child psychotherapy and do my mental health nursing, I am allergic to a dairy, just a random fun thing, and also kind of things I am interested in as a person so I love ballet and I love art and I speak British sign language, just kind of random stuff really. So, I just thought it is important just for my tutor just to get to know me as a person*
>
> *(Student 3-MH, initial interviews)*

Apparently, this sharing feature was not only beneficial for the students, but it also seemed to offer some benefits for the tutors. The tutors appreciated that their students were able to share their work with them online. They believed that having access to this work in the e-portfolio provided them with an invaluable opportunity to monitor their students'

levels of engagement with the course and their progress toward meeting the learning outcomes.

> **Tutors' interviews:**
>
> *I do like the fact that my students' work is there and I can see it and I can look at the work that they have uploaded. And I can see that they've taken time to may be scanning something, scanning their own notes that they have made from a lecture or there is a piece of reflection there. And I like that because it shows that they're engaging with the course and they're engaging with their own learning to become really a good nurse, that excites me I think… it's nice actually to see that level of engagement. I think PebblePad gives you that ability to see that.*
>
> *(Tutor 3, initial interviews)*

Moreover, some tutors recognised another important benefit, which was their ability to provide the students with immediate and individualised feedback on their shared work. This way, the students did not have to wait until they physically met with their tutors in order to receive their feedback. The web-based nature of the e-portfolio allowed the tutors constant access to what the students were sharing with them from anywhere, hence, they were able to provide timely feedback, as required. Similarly. The students had constant and immediate access to this feedback using their e-portfolio.

> **Tutors' interviews:**
>
> *I think the electronic portfolio for me enables me to give a fairly instant feedback to the students so they don't have to wait for the tutorial to be available to them. So, they can see what I'll be saying about assets*

> *and about what they're sharing with me and they can see that fairly quickly.*
>
> *(Tutor 1, initial interviews)*
>
> *They [students] submitted a learning styles inventory which was like a questionnaire that they've gone through. So I looked at that separately without them. I was able to access it on the computer and pull up their results and what their answers were. And I would give them some feedback about encouraging that they are good at this and not so good at that.*
>
> *(Tutor 4, initial interviews)*

Moreover, the e-portfolio provided tutors with the opportunity to verify whether the students had completed the mandatory learning tasks that were required of them. Through this system of monitoring, they were able to verify whether the students had shared evidence of their completion of these tasks with them, before the deadlines.

> **Tutors' interviews:**
>
> *I have monitored whether or not they have actually done their online learning that they were supposed to do, and whether they have ticked all the boxes on there.*
>
> *(Tutor 7, initial interviews)*

Sharing with other students

The second audience group, with whom the students shared their work through the e-portfolio, was their colleagues who were participating on the same course. Some students decided to take the full advantage of the ability to share their work with anyone and, consequently shared some of their work with other students. They believed that they would learn

more by exchanging information and sharing their experiences with each other. However, they were aware that not everything could be shared with other students. For instance, due to the potential for plagiarism, they could not share any of the assignments they had to formally submit.

> **Students' interviews:**
>
> *I think it's very good to share your experiences with people, so that can also instigate them as well to learn from what you've had. I think it's quite amazing. I've shared some information, a lot of information with my colleagues on the e-portfolio. I'm a bit careful now not to send a lot because I haven't submitted my assignment, but all my reflections. But most of them were just a few reflections, show them reflections, what I've seen, for them to be aware of.*
>
> *(Student 9-A, follow up interviews)*

It seems that the shareable nature of the Webfolio motivated the students to consider ways to use their experience to inspire other students. Some students thought it would be good idea to share the Webfolio that they created about their elective placement with the junior students who were still in the process of preparing for this placement. They believed that their Webfolios were rich enough to be used as an educational tool to help the new students understand the process of the elective placement and to see real examples of other, completed placements.

> **Students' interviews:**
>
> *I'm thinking about maybe publishing it [Webfolio] or using it as a learning practice for other students. I think definitely, since I've spent time creating it, I think I should spend time giving it away by sharing it with other*

> *people who will use it for their learning. I think I will definitely do that, yes.*
>
> *(Student 9-A, follow up interviews)*
>
> *There's a students' project called SHEEP. It stands for Students Helping Each Other on Elective Placements. So it's going to be at the elective fair. Because at the moment there are so many different kinds of elective opportunities but there isn't really an organised thing for us to learn from older students. It'll mean that if someone wants to know more about it I can link them, I can show them my Webfolio then.*
>
> *(Student 1-MH, follow up interviews)*

The e-portfolio also seemed to be a useful tool for enabling the students to build their own online communities in which they communicated, shared their work with each other, and exchanged ideas and information. For example, one of the tutors, who is quoted below, believed that she could use the features in the e-portfolio to help her group of students to communicate with each other and to share information and experiences about their placement online. She set up a blog for her students on the e-portfolio, and shared it with them, to enable them to interact and share their own information there. The students then took this a step further and shared the blog with other groups who went on different placements. As a result of this they started to exchange any information, issues and concerns related to their placements in order to become more knowledgeable about each other's placements. Interestingly, the tutor observed that her students did not share the blog with all students, rather, they set their own criteria for selecting who they wanted to share their information with. The built-in features within the e-portfolio

enabled them to selectively share with the students that they believed deserved to receive such information.

> **Tutors' interviews:**
>
> *My second year group for Module 6, they wanted to share some information together. I took pictures with my tablet of their flipchart paper that they'd worked on in class, to share with the rest of the group, and I basically set up a blog where I added these pictures in so that the students could have the information. Now, the students have accessed it and looked at it, and I said "you can upload whatever you want to as well", they've shared it with individual people that have asked them. For example we had sub-groups within our group: one for looking at cancer, one for looking at surgical, one for looking at cardiac, one for looking at respiratory; so if someone from respiratory wanted to look at the cancer one, because maybe they're going on a cancer ward or they just wanted that information anyway, then they would just talk to them in the class and say "can you share that with me on PebblePad?", and they've done that. So that's been quite nice but they've been very selective of who they've shared with. They don't want to have their work shared with people who don't even come to the sessions, but they would share it with people who they know have been off sick or they've had an emergency with their children or whatever, they would share that information.*
>
> *(tutor 3, follow up interviews)*

Share with potential employers

The fact that the Webfolio could be shared online with anyone outside the university as a mini website encouraged several students to think about sharing their Webfolios with their potential employers when it came to applying for jobs. The

students viewed the Webfolio as a professional tool that could increase their employability and make them stand out. They believed that sharing their Webfolio with an employer could provide stronger impression than sending a CV because it would show more substantial evidence of their accomplishments, the skills they possessed and the knowledge they had acquired.

> **Students' interviews:**
>
> *This [Webfolio] is like a work product or something which shows your learning, and when you, for example, apply for a job, you could show it, because you could put it online. Well, not really online, if you know the link you can show it to someone. It will be online, like PebblePad, you can always see it in a browser, yes. So you can show your work to, for example, an employer, and show your experience, and what you did, and where you've gone, and so on.*
>
> *(Student 6-A, follow up interviews)*
>
> *The webfolio is more than a CV, because it will enable them to see that you have this potential. It's like you sell yourself more, they see the pictures, they see the video you've created, and they see your learning outcomes, where are the insight visits you've been. They can see, "Yes, he has been to this one before. He knows what he's doing. Let's give him this job."*
>
> *(Student 9-A, follow interviews)*

It seems that the Webfolio had a great potential to satisfy the requirements of employers and the expectations of the nursing graduates. As one of the curriculum planners indicated, it was likely that the Webfolios would appeal to

many employers, as they would expect the graduate to show evidence of how they were best suited for the position they had applied for.

> **Curriculum planners' interviews:**
>
> *I think that's [webfolio] going to put our students in really good stead. They [employers] want to see a presentation. They want to see what they've learnt and what they are taking away from their training. What is it, for them, to be a graduate? Why do we employ you as a graduate rather than just as a…? You know, why don't we just get a staff nurse who's had four years' experience? What are you offering? And I think that's where PebblePad's going to be of great use because it just shows a reflective, evidence-based practice. You can't do that on paper.*
>
> *(Curriculum planner 4, follow up interviews)*

Sharing with family and partners

Interestingly, families and partners were among the audiences with whom the students shared their work. Some students shared/planned to share their Webfolios with their family member and partners. This was because the students viewed it as a presentation tool that showed their achievements and accomplishments in a visually attractive way. Its social networking feature allowed it to be shared as web link through which they could easily share their Webfolios with their family and partners in order to show them, and celebrate with them, what they had achieved and learnt in their elective placement and potentially obtain constructive feedback.

Students' interviews:

I have shown it to my partner and I was dead excited. I said, "Look at this, look at this, I've done that, this is what I've done!" It's something different. It looks really professional as well. And I will show it to my mum if I'm ever over.

(Student 10-A, follow up interviews)

My partner will wind up seeing it. He'll be proofreading it. He helps me with my assignments, so he reads through them before I hand them in and suggests stuff that I might want to change. So he'll see it, definitely. My family will probably be interested to hear about the elective as well.

(Student 1-MH, follow up interviews)

Curriculum planners' interviews:

I've had one or two students who've actually shared their work on the web, some of the webfolios have now gone on the web, mainly for their families. They've said "oh, they want to have a look" and they've said "oh, this is good; I've got my own little website now". I think that's one of the things that's going to encourage them.

(Curriculum planner 4, follow up interviews)

10.4 Challenges and Contradictions in the "Sharing" activity

The data analysis showed that there were three main challenges which were encountered by the students and the tutors while engaging in the activity of sharing. These challenges were: inadequacy or lack of formative feedback,

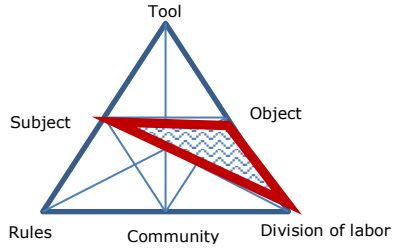
the complexity of sharing in the e-portfolio, and difficulty with monitoring the students' submissions. As in the previous chapters, the root causes of these challenges were traced through the identification of the contradictions in the activity system that caused them. Both the challenges and the contradictions are described below. Table 10.1 summarises all these challenges and contradictions.

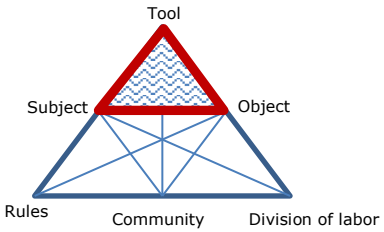
10.4.1 Division of labour-related challenges

Inadequacy or lack of formative feedback

The inadequacy or lack of feedback was the biggest challenge that influenced the students' motivation to share work with their tutors and facilitators in the e-portfolio. Some students complained about not receiving formative feedback on the e-portfolio from their tutors and facilitators on the work they had shared with them. It seems that there was a variation among the tutors with regard to commenting on and giving feedback to the students on their shared work. Apparently, not all the tutors commented on their students' work. In general, the students completed the blended learning activities and then submitted them to the workspace on ATLAS for their tutors, both in order to seek feedback and to demonstrate their completion of the tasks. However, as is shown in the following excerpts, some students became disappointed when they did not receive any feedback on their work from their tutors. They felt that all their efforts and time had been wasted, as they received no response.

Table 10.1 Challenges and Contradictions in the "Sharing" activity

Challenges		Area of contradiction / sub-triangle	Explanation
Division of labour related challenges	**Inadequacy or lack of the feedback**	**Subjects- Division of labour- Object**  	This contradiction occurred when the students (subjects) shared some of their work on the e-portfolio expecting to receive feedback from their tutors, but the tutors did provide feedback on everything they had shared (division of labour).

Tool related challenges	**The complexity of sharing on the e-portfolio system**	**Subjects- Tool- Object**  	Some students found the process of sharing their work in the e-portfolio was not straightforward. As a result of this, the students (subjects) became reluctant to share their work in the e-portfolio. This complexity was found to be caused by the fact that, for some students, (subjects) the multiple features and functions available for sharing were confusing (tool).
	Difficulty in monitoring the students' shared/submitted work		Some tutors (community) found it difficult to monitor their students' submissions because ATLAS (tool) did not enable them to view and organise the submissions in a way that would make it easier for them to locate and comment on these submissions.

Students' interviews:

Obviously, you've completed the work for that blended learning section, but that's about it. I don't know if anyone can see it. I would assume people can see it but no one ever gives us feedback to say "you haven't completed this". So I'm not too sure, I don't know if it's just there for you to put stuff on so you know where it is.

(Student 14-A, follow up interviews)

It's [work] been submitted to the workspace for the tutor. But no feedback, no, which again, if you don't get any feedback you think "Well, what's the point of sharing stuff, really, if you don't get any feedback?" And that's happened in the first year as well, we didn't really get any feedback from the tutors about it, or from the module leads. So I just thought, "Well, what's the point in sharing stuff with the tutors?" You might as well just do it in the class because then you get the feedback straight away.

(Student 4-MH, follow up interviews)

It kind of got to the point last year when everybody was like, "Why are we doing it? Nothing's being looked at and nothing's being fed back to us if we're doing it correctly." So we've gone into this year but you still don't get any feedback. So you don't really know if what you're doing is correct or if you actually need to do it and you're doing extra work. It's kind of, you're going in blind, really, again.

(Student 8-A, follow up interviews)

Some students reported that the only feedback they had was on their elective planning documents: elective plan (excerpt 1) and risk assessment questionnaire (excerpt 2). Completing and submitting these two documents was mandatory. The elective facilitators had to review them and provide feedback as

necessary and approve them before the students could go on their chosen elective placements. These students noticed that feedback was only provided when the work was mandatory and the tutors or facilitators had to approve or mark it.

Excerpt (1)

> **Students' interviews:**
>
> *The only feedback I've had is some planning around the elective placement but that was you had to submit that on PebblePad. We got some feedback on it to help us prepare for the webfolio. It was a mandatory thing to do for the planning of the elective placement, and I think the facilitators had to put some feedback on it to make sure that we were on track to be able to produce our webfolio.*
>
> *(Student 12-A, follow up interviews)*

Excerpt (2)

> *That one was "Elective risk assessment", this is one that was shared, so they have to sign it off to let you go for your placement, so my tutor has signed it off, "completed by assessor" and "elective planning". They've given me two feedbacks from my tutor because it's mandatory and they have to do it, so they have to sign it off on PebblePad. But I think, if it wasn't a mandatory thing for the tutors, I don't think it would get done. I mean, I never got any feedback last year.*
>
> *(Student 8-A, follow up interviews)*

The data from the online observation of the students' e-portfolio was in agreement with the students' views about not receiving feedback on voluntary submissions to the workspace in ATLAS. It was evident that, for many students, there were no comments left in the comment box on any of the work that they had

voluntarily submitted. Only a few students received short comments from their tutors on some of their work (see figure 10.2). On the other hand, the majority of the students received comments on the mandatory tasks that they submitted to the workspace, such as the risk assessment questionnaire and their elective plan. These comments were often relatively detailed, depending on the students' progress (see figure 10.3). The comments included suggestions to help the students complete all the required sections in their elective plan and risk assessment. Interestingly, the online observation revealed that the students were submitting a variety of work to the workspace in ATLAS and then they stopped after a while. It seemed that the lack of feedback from their tutors or facilitators on the work they were voluntarily sharing with them may have dicouraged the students from sharing again.

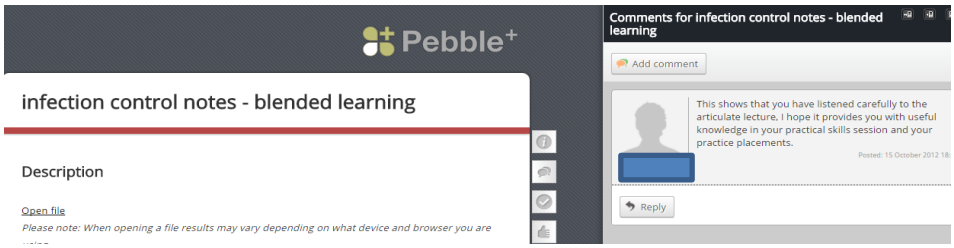


Figure 10.2: Example of feedback given on voluntarily shared asset (Student 10-A e-portfolio)

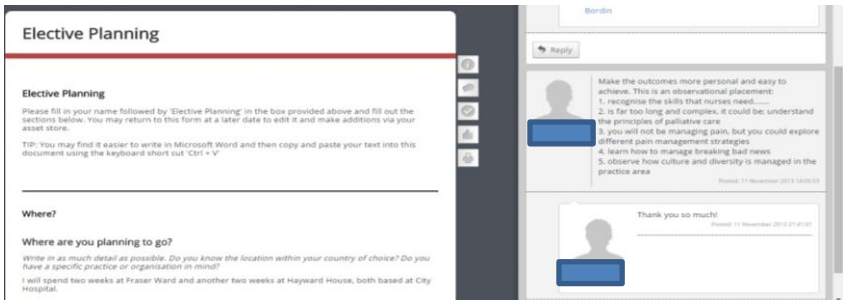


Figure 10.3: Example of feedback given on the elective plan (Student 7-A e-portfolio)

The problem of a lack of, or inadequate feedback appears to have originated from a contradiction between the subject and division of labour elements in the "sharing" activity system. The contradiction occurred when the students (subjects) shared some of their work on the e-portfolio expecting to receive feedback from their tutors, but the tutors did provide feedback on everything they shared (division of labour).

In response to students' complaints about the lack of feedback, the tutors asserted that there was a difference between the students' expectations and the actual reality with regard to receiving feedback on everything they shared. Below are the reasons that were reported by the tutors that seem to have contributed to this contradiction:

Feedback is not required on everything

While the students expected that everything they shared should be looked at and commented on, their tutors argued that not every piece of work or evidence required formative feedback. It appears that the tutors had their own criteria for selecting which pieces of work should receive feedback. They seemed only to comment on the work that they believed would be enhanced by their feedback, therefore assisting the students in moving forward. An example of this work was the reflective writing the students were producing.

> ***Tutors' interviews:***
>
> *The other thing is that I look at the evidence of online learning when they upload evidence. But the evidence is largely a certificate that says "98.2%" or something, and then I'm supposed to comment so I comment "aha, I see you got 98.2%". It's just transferring information around, really, there isn't anything more educationally deep.*
>
> *(Tutor 2, follow up interviews)*

Feedback was received in facilitated group

Other tutors stated that it was not necessary to provide online feedback on the blended learning tasks that the students shared with them on the e-portfolio. They asserted that the students had the opportunity to discuss these blended learning tasks in their facilitated groups, and to ask for clarification and receive feedback from their facilitators. Therefore, the tutors assumed that the students were sharing these tasks with them on the e-portfolio in order to show how much they were engaging with the module content, rather than for the purpose of seeking feedback.

> **Tutors' interviews:**
>
> *It's an expectation that part of the module is self-directed, so they do the blended learning, they produce a resource, but the next part is they come back to the facilitated groups and they feed back. So that's how we engage with them with feedback on their learning, and the assessment is actually an exam. So the work that they're putting onto PebblePad is really for their own portfolio of evidence generally, to demonstrate that they are engaging with the materials. Undoubtedly it will help them pass the assessment and we've said that the students that engage with the module content do much better.*
>
> *(Tutor 5, follow up interviews)*

Priority for mandatory and assessed tasks

Another reason for the lack of feedback was that the mandatory tasks appeared to have priority over the other work the students had voluntarily shared in the e-portfolio, with regard to giving feedback. Some tutors thought that their priority was to look at and provide feedback on the mandatory learning tasks because

it was part of the students' assessment. On the other hand, the other work the students were voluntarily sharing with them seemed less urgent for the tutors because it could be viewed and discussed later, during the intermediate tutorial meeting or in their end of year meeting.

> **Tutors' interviews:**
>
> *You don't look at everything, it's getting the general feel, but you do look at the mandatory. So what you need to do is this, this and this, so you check that, but other things, it might be that you look at one… I think it's there and then you can look at it at the end of the year. I suppose we could but in the bigger scheme of things you're not going to be looking at it throughout, unless it's a summative assessment or a student asks.*
>
> *(tutor 6, follow up interviews)*
>
> *They've uploaded the mandatory sessions, so that's the only thing I've looked at. But I don't check it in between. I will have a look when we have the yearly meeting, well, six-monthly meetings, to fill in the appropriate forms.*
>
> *(Tutor 8, follow up interviews)*

The only task/work that all students received very detailed feedback on was the Webfolio, however, the feedback was summative. The students received this feedback after their Webfolios had been marked by their facilitators at the end of the year. The majority of this feedback was very detailed and seemed to be structured around the criteria the facilitator used for assessing the Webfolio (see figure 10.4). In conclusion, nearly all students received feedback when the submitted work on the e-portfolio was mandatory or it had been submitted for summative assessment, but when the submitted work was not mandatory and the students submitted it voluntarily for

formative feedback, only a few students received comments from their tutors.

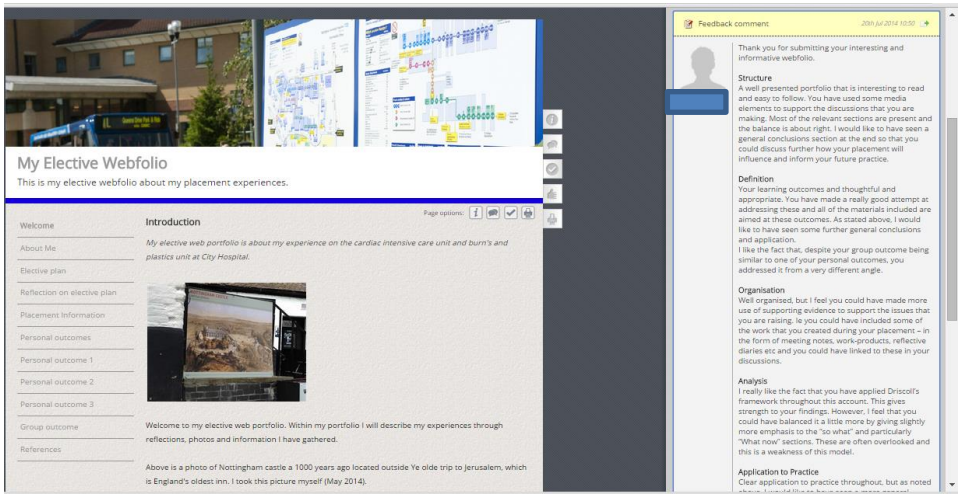


Figure 10.4: Example of feedback given on the Webfolio (Student 14-A e-portfolio)

Preference for face to face feedback

The preference for face to face feedback by some tutors was another challenge for the students who were expecting to receive online feedback on their shared work. For example, the tutor quoted below reported that she would wait until she met with her students in the tutorial meeting to discuss and review the work they had shared in the e-portfolio.

> **Tutors' interviews:**
>
> *Sometimes you get an email saying "some assets have been added" and you think, "Assets to what? What is it? I don't know." And I think, "Oh, I won't look at that now because I'll wait until I see them and then I'll look back at what's been added, and they'll tell me what they've added, and we'll go through it together." That tends to be my approach.*
>
> *(Tutor 4, follow up interviews)*

Lack of time

A lack of time was identified by some tutors as another challenge that influenced their ability to provide feedback on the work that was shared with them in the e-portfolio. They admitted that it was difficult for them to find sufficient time to review and comment on the work that had been shared.

> **Tutors' interviews:**
>
> *We use the PebblePad to link with the blended learning, so they do online activities on Moodle and, out of that, an asset is produced. So if they do something like a PowerPoint presentation, that can be linked then to their PebblePad portfolio. But we don't mark it or comment on it particularly, just because we haven't got time. In an ideal world we would go and put comments on each individual student's contribution but that's just too difficult to do at the minute. (Tutor 5, follow up interviews)*

The number of students and the amount of sharing

The number of students involved and the number of things they were sharing were identified by the tutors as another challenge. Given the number of the students that each tutor was responsible for, as well as the lack of selectivity shown by some students in terms of sharing their work, the tutors felt it was unrealistic for them to provide feedback on every single piece of evidence on the e-portfolio. With their busy schedule and multiple responsibilities, giving this amount of feedback felt overwhelming and beyond their capacity.

> **Tutors' interviews:**
>
> *Ideally I would like to look at everybody's work that they've done in the blended learning, what they'd uploaded, but the reality of doing that with the number of students we've got*

is quite challenging… If they're doing activities each week it's just keeping on top of that and all your other teaching as well. So if you had smaller groups, if you had, like, 10 students, it would be much more easy to look at what they're doing on their PebblePad and comment on that.

(Tutor 5, follow up interviews)

They share things aren't required necessarily. I think they are trying to look at ways for the evidence for their learning outcomes but it's not compulsory that they share them with me at this point; they just have to upload them. But, they do share them in terms of when they're working through things and looking at topics. I do make comments as I said but I don't think that they have to share the amount they do. I have got one girl who has shared just about everything she's honestly ever written which is very intense but I want to commend her really and say "well done, that's brilliant" and she's great learner. But it just get a bit of overkill what can I say in my comment section about this.

(Tutor 3, initial interview)

10.4.2 Tool-related challenges

The complexity of sharing work in the e-portfolio system

The other challenge that the students experienced while carrying out the "sharing" activity" was the complexity of sharing work with others using the e-portfolio system. Some students found the process of sharing their work in the e-portfolio was not straightforward. As a result of this, the students became reluctant to share work in the e-portfolio. The activity system analysis revealed that this challenge was found to be caused by a contradiction between the subject and the tool elements in the "Sharing" activity system. Some students (subjects) were reluctant to use the e-portfolio to share their

work with their tutors due to being confused by the multiple features and functions available for sharing (tool), as shown in table 10.1. They did not understand what each function and button could do in terms of sharing, or the difference between the various buttons. This lack of understanding led to a lack of confidence in terms of clicking the appropriate button for sharing their work with others. They were afraid of making mistakes, such as sharing their work with the wrong person.

> **Students' interviews:**
>
> *There're so many things like the atlas and things, like "for me", "by me" buttons. I don't think there's a package to just explain each thing in detail, so I think that's what puts people off using it. They don't know enough and then if you start uploading stuff, and then start pressing buttons, and you lose stuff, then obviously that's what people are worried about, or when you're sharing it with somebody you don't want to share it with. Obviously you've got the risk of losing things or pressing on things that you don't want to do. It's like getting a new phone for the first time, you're always cautious because you don't want to press something that you don't want to touch…If there was a package to explain everything I probably would use it more often.*
>
> *(Student 14-A, follow up interviews)*

Specifically, there was confusion between the three buttons in the e-portfolio: "share", "submit" and "publish". The students were unclear about what each button could do for them, that is, whether they did something completely different in terms of sharing, where their work would go and who would see their work if they clicked on any of them. Therefore, when the students were asked to copy and "submit" their modular learning portfolio document to the workspace in ATLAS in the e-portfolio, they were not sure whether their tutors would have

access to it or whether they needed to "share" this document individually with their tutors. Moreover, the students were uncertain as to whether the copy of the modular portfolio they submitted to the workspace was linked to the copy in their asset store so that their tutors would automatically receive updates every time they attached evidence to the learning outcomes in the copy in their asset store or whether they needed to re-share the whole document every time they attached evidence.

> **Students' interviews:**
>
> *I've attached things to my portfolio [modular portfolio], at the beginning of the year we copy and submit it and that's on ATLAS. So, that's on your public space and then there is also a copy of it in your asset store which you attach things to. So, I presumed that the tutors can see it. But, I don't know if you have to share it or not because there is a button in your asset store for sharing and I haven't shared it because I just presumed that because that was in the ATLAS as well that must get updated the same time with that one.*
>
> *(Student 8- A, initial interviews)*

The other thing that contributed to increasing the complexity of sharing in the e-portfolio was related to how things worked in ATLAS[1]. As mentioned in the "Tool" section, ATLAS could contain multiple workspaces and the students were asked to submit different work to different workspaces. It seemed that having numerous workspaces in ATLAS confused some students because they didn't know which work should go to which workspace. One of the tutors noticed that some of her students

[1] ATLAS "is the institution space that contains workspaces set up by your tutors to manage teaching activities and assessment" http://www.pebblepad.co.uk/pp3help/helpfile.aspx?f=19&v=1&t=1&tg=3bf540bf-f5a7-4714-a00e-bca93111676b&v3k=d2a5149c-1595-4e4e-a02a-494a9f52d7c5

were sharing/submitting their work in the incorrect workspace. As a result the tutor was not able to see what her students were sharing with her because she was checking a different workspace to the one that the students had, mistakenly, submitted their work to. An example of a submission to the incorrect workspace can be seen in figure 10.5. Student (1) submitted her risk assessment questionnaire to the "modular learning" workspace instead of submitting it to "1209 elective" workspace. It is worth mentioning that this questionnaire had not been reviewed by her facilitator and no comment had been attached to it. Most probably, her facilitator was not aware that she had submitted this questionnaire to this irrelevant workspace.

> **Tutors' interviews:**
>
> *Now, they [students] are supposed to put some of their module learning into PebblePad, I think, theoretically. But I don't know how many of them have because the trouble is they have to then scan documents in and upload them as assets, don't they? And then they've got to share them with me and we've had a few problems with the sharing of assets. Some of the students had got confused and put them in the wrong place, or not put them in and then I haven't been able to see them.*
>
> *(Tutor 4, follow up interviews)*

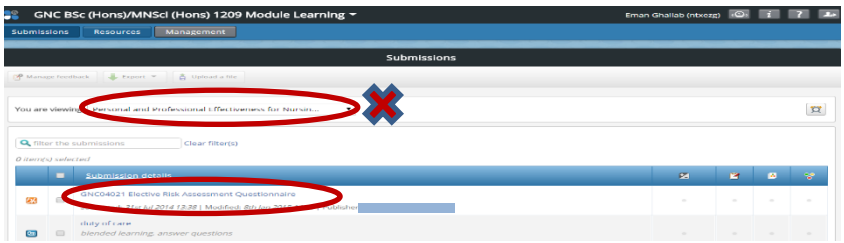


Figure 10.5: example of submission to the incorrect workspace (student 1-MH)

Apparently, in order to be able to share work with others in the e-portfolio, the students needed to have a reasonable level of ICT skill and some confidence in using technology. However, it seems that some students lacked confidence with using technology. One of the tutors, as shown in in the excerpt below, had a student who failed to submit her modular portfolio to the workspace on the e-portfolio due to her lack of confidence with the technology. Despite the support that she was given by her tutor, she still needed to find a way to enhance her ICT capability and increase her confidence.

> **Tutors' interviews:**
>
> *I've got one like I said who hasn't uploaded her modular outcomes to share it with me yet. And we've talked previously because I had to kind of get her to do initially her portfolio and put back and get it running and I said "you need to do this" and we had to talk through it. And I think some of that it's her anxiety of electronic learning really, it's about that and I'll pick that up with her, I will talk to her about that to see what else we can do to support her.*
>
> *(Tutor 1, initial interviews)*

One of the curriculum planners reported that the students in this course were assumed to be digital natives, more technologically savvy and, therefore, comfortable with using technology. Based on this assumption, the e-portfolio was introduced to the students as a learning technology that had the potential to transform their learning. However, that turned out to be a false assumption given that not all the students were alike in terms of their ICT skills. There were some students who were not advanced technology users and they struggled to use the e-portfolio to, for example, share their work with others. As

a result, the curriculum planners found themselves facing a dilemma of whether or not the e-portfolio should be a mandatory requirement that they had to use for carrying out activities such as sharing work with others.

> **Curriculum planners' interviews:**
>
> *I think to assume that, because the students are a young group, that they are necessarily IT-savvy in every aspect, is wrong. I still have students who do not go on Facebook, who do not have technological smartphones, who simply have a phone to make a phone call on. And where you have students who choose that route, I am not convinced it's for us to say to them "the only way you can learn is by signing up to all of this technology", and I think that's the biggest mistake we made. We made the assumption that all students would do it because we told them to, a bit like giving them a course book, and actually they won't. And we have two choices, we either make it mandatory, in which case they will, to an extent, but with bad grace, or we say "this is one of the ways in which you can demonstrate your learning and there are some others, and here they are, and we will work with you".*
>
> *(Curriculum planner 6, follow up interviews)*

One of the tutors advocated that the use of e-portfolio should be optional, not a mandatory requirement. She believed that making it mandatory would "discriminate" against the students with poor ICT skills or those who lacked confidence in using technology. Therefore, she suggested that the decision should be left to the students to decide whether to use the e-portfolio to share their work with others or to use any other tool.

> **Tutors' interviews:**
>
> *I'm not convinced that an e-portfolio is better or worse, I think it's an option and some students would probably very much enjoy using it. But I just think when you start saying*

> *it's got to be an e-portfolio you're discriminating against students who probably aren't as good at or are comfortable with computers as other people are.*
>
> *(Tutor 8, follow up interviews)*

Difficulty in monitoring the students' shared/submitted work

The data analysis indicated that several tutors expressed concerns about their ability to monitor and manage the work their students submitted to them in the workspace (ATLAS) in the e-portfolio. The activity system analysis suggested that this issue seemed to be caused by a contradiction between the community and tool elements in the activity system. Some tutors (community) found it difficult to monitor their students' submissions because ATLAS (tool) did not enable them to view and organise the submissions in a way that made it easier for them to locate and comment on these submissions. Therefore, they strongly advocated the choice of alternative organisational layouts in the e-portfolio to or having the ability to re-arrange these submissions in their own way. However, the functionality of the e-portfolio did not appear to be flexible enough to do that. There were no available options to view work differently in ATLAS.

The tutors differed in the way they wanted to view the submitted work. For example, the tutor quoted below complained that he could only view his students' submissions as a long list, without any further organisation. She preferred to see her students' submissions organised according to their academic year. She also wanted to have separate links for directing the first and second year students to make their submissions in different places.

> **Tutors' interviews:**

> *I suppose my biggest issue with PebblePad is, now that I've got first years and second years and there seems to be no organisation of them on that first bit. Every time something's added, it's just added into the list but there's no organisation going, like, "these are all your first years' stuff, these are all your second years' stuff." So that first page isn't organised to go "these are the links that you need for your first years, these are the links that you need for your second years", and I just think that would be useful if that could be done.*
>
> *(Tutor 1, follow up interviews)*

Other tutors, as demonstrated in the excerpts below, wanted to have the students' submissions organised by the students' names, whereby, when they clicked on a student's name or photo, a page would open up with all the submissions of that particular student collected in one place. However, it was not possible to do this with the current organisational layout of ATLAS because the students' submissions were scattered in different workspaces. Accordingly, in order for the tutor to see all the submissions of one student, they had to open multiple pages and click on multiple links. That, in turn, made the tutors question the efficiency and flexibility of the e-portfolio system.

> **Students' interviews:**
>
> *The organisation of the material is, you know, like you get all the pre-course learning together, which we talked about, and what I want is to click on a student and have all that student's everything, not have to click on this and click on that and open this, and when you actually look at the screens, much of the screen is actually just colour.*
>
> *(Tutor 2, follow up interviews)*

Curriculum planners' interviews:

PebblePad's easy to complain about. It's not the easiest system to work. A colleague of mine said to me, "I want to be able to go on the screen, press my student's face and up comes everything. I don't want to have to go through all of this. I don't want to log in here and log in there and do this and do that. I want a series of pictures of all my students, I want to tap on there, and I want all the evidence. Why can I not have that in this day of technology? Why can't PebblePad provide that?" Well, why can't it? Why do we have to have a guide every time we need to do it? Because the system isn't ready for us.

(Curriculum planner 6, follow up interviews)

One of the curriculum planners showed an understanding of why the tutors were disappointed in the e-portfolio system. She believed that it did not fulfil the tutors' expectations. She explained that it was not as simple and flexible as it should be, considering the advancements of modern technology. She argued that if looking at the students' submissions in ATLAS took tutors more than three mouse clicks, then the usability of the e-portfolio was in question. She referred to the "three-click" rule, as a means of highlighting the risk that the tutors might become frustrated and possibly stop using the e-portfolio, if they had to click on multiple links to find the information they needed.

Curriculum planners' interviews:

What we want from the system is kind of even further ahead, really, in term of simplicity. And why? Because actually, we're an iPad generation, iPad generation is touchpad. We're all of a touchpad generation to a certain extent, you stick your fingers on a screen of something and the information

> *you want should arrive. And that's the generation that we've very rapidly become used to, and PebblePad doesn't give that. PebblePad makes you jump through hoops, you have to read instructions, and they're not difficult but they're more difficult than they need to be. But every computer system is the same in that respect: the easier you make it, the more likely people are going to use it. If you get more than three steps people will not use it. We know that, the evidence suggests that more than three clicks, they're not going to do it.*
>
> *(Curriculum planner 6, follow up interviews)*

It, therefore, appears that the e-portfolio system was seen to be inefficient as it affected the tutors' productivity in managing and monitoring the students' submissions.

> **Curriculum planners' interviews:**
>
> *If you have to click, then sign in, then click something else, and then do something else, and then you get into it, and then you get out of it, and then it doesn't work the way you want it to… You know, I've got so many insurance certificates to check on PebblePad for students going on electives, and I can only check one certificate at once. That's not helpful because I have to log in to check the next certificate. So it's a clunky system. It takes time. If I've got three certificates to check for one student, for different types of insurance, I have to log in and out for everyone. If I've got 10 students that's 30 log in and outs just to do those insurances. It takes forever. It takes forever. So why would I be happy doing it? It's a cup of coffee and a couple of hours, and I know that.*
>
> *(Curriculum planner 6, follow up interviews)*

10.5 Summary

This chapter discussed the sharing activity which was the fourth and final activity that was mediated by the e-portfolio in this

study. The e-portfolio was described by the students as a useful space for sharing their own work with a wide variety of audiences, for the purpose of inviting collaboration and feedback. It allowed them to have the control over the content to be shared and decide upon the audience with whom they wanted to share their work, as well as the purpose of sharing this work with them. However, inadequate formative feedback and system limitations were the major challenges that affected the students' use of the e-portfolio to a sharing tool.

CHAPTER ELEVEN

DISCUSSION

11.1 Introduction

This chapter presents a discussion of the key findings of this study in conjunction with the relevant literature from various disciplines. This study aimed to address a number of gaps within the literature (as discussed in chapter 3), by:

- Developing an in-depth understanding of the pedagogical value of the e-portfolio as a learning tool for nursing students.

- Exploring the contextual challenges that could affect the role of the e-portfolio in mediating the students' learning activities through tracing the underlying contradictions that generated these challenges.

In order to address these aims, an exploratory qualitative approach was employed; whereby an instrumental case study was used to collect the data through conducting initial and follow up semi-structured interviews, online observation and document analysis. Activity Theory was used as a methodological and analytical framework to analyse the data collected.

11.2 Discussion of the major findings

This section is divided into two main parts. The first part discusses the key findings that address the first aim of the study: the pedagogical value of an e-portfolio as a learning tool for the students. The second part discusses the key findings that address the second aim: the contextual challenges that could

affect the role of the e-portfolio in mediating the students' learning

11.2.1 Pedagogical value of the e-portfolio

Higher education institutions worldwide are embracing student-centred learning as an effective and dynamic approach. The key concept of this approach is to place learners at the centre of their education by providing them with the tools that allow them to become active participants in their learning endeavour (Entwistle, 1997;Entwistle, 1998;Weimer, 2002;Biggs, 2011). The findings of this study demonstrate the e-portfolio, with its processes and affordances, appears to have played an important role in shifting the locus of control from being teacher-centric to learner-centric and enabled power to be shared between students and teachers through: (1) fostering communication and interaction with others, (2) supporting formative assessment (assessment for learning), (3) scaffolding the reflective process, and (4) allowing for multiple modes of presentation and self-expression.

11.2.1.1 Fostering communication and interaction with others

The findings of the current study show that many students viewed the e-portfolio as a valuable communication tool that have helped to reduce their feeling of isolation and disconnection they have experienced during their long placements as a result of being separated from their tutors and peers by time and distance (section 10.3.1.2). This may be because the shareable and ubiquitous connectivity nature of the e-portfolio provided them with more opportunities to stay connected and interact with their tutors and peers regardless

the time and location. The fact that current e-portfolio systems share more in common with social interaction and Web 2.0 technologies makes them more flexible and interactive platforms that offer a high level of accessibility and connectivity making communication less tied to particular locations or set times and dates, in this age of information and communication technology (Sorensen and Takle, 2005;Lee and McLoughlin, 2007;Jenkins et al., 2009). Having such flexibility and connectivity enabled the students in the current study to unlimitedly access their e-portfolio to communicate and share their work with others from their mobile devices, for example, smartphones, tablets, laptops, or any computer connected to the internet, at any time whilst on campus, on placement, on the bus or train, and/or from home. This ubiquitous access, along with the inbuilt social networking tools within the e-portfolio such as file sharing and publishing tools, blogs, tagging functionality, and commenting spaces, allowed for easy, instantaneous and ongoing online communication and interaction with diverse audience such as their tutors, peers, and even family members and friends, as similarly reported in previous studies (Garrett and Jackson, 2006;Ruiz et al., 2009;Bogossian and Kellett, 2010;Parker et al., 2012;Stewart, 2013;Tonni and Oliver, 2013). These communication and sharing affordances appear to have created a participatory and interactive culture that provided an opportunity for: (1) enhancing students-tutors connectedness, and (2) facilitating peer learning and support. Each of these is discussed in more detail below.

11.2.1.1.1 Enhancing students-tutors connectedness

The students in the current study considered communication with their tutors as essential element that contributed to their

learning and progress (section 10.2.2). This may be because they believed that maintaining a regular communication with their tutors would support and enhance their learning, through having the opportunity to regularly update and provide their tutors with a better sense of their progress and any circumstances that might have affected their learning, share and discuss with them their evidence of achieving the desired learning outcomes and ask them for formative feedback on the work produced so far in order to improve it and be able to change their practice accordingly. The significance of communication and interaction with tutors is also echoed in previous studies which suggest that effective communication between students and their tutors can lead to more learning opportunities that contribute to the development of students (Driessen et al., 2005;Levett-Jones et al., 2009;Gans, 2009;Gablinkske, 2014). This fits well with Vygotsky's (1989) idea that social interaction plays a fundamental role in learning and development as it "actually produces new, elaborate, advanced psychological processes that are unavailable to the organism working in isolation" (p.61). He argues that learning does not occur in isolation, rather, it takes place on two levels: "first, on the social level, and later, on the individual level; first, between people (interpsychological) and then inside the child [learner] (intrapsychological)" (Vygotsky, 1978, p.57).

The findings show that having a busy schedule and being away on lengthy placements, made it difficult for the students in the present study to meet and communicate with their tutors face to face on a regular basis. Therefore, for many students, the e-portfolio became the tool of choice to communicate with their tutors because it offered them an easy, flexible and quicker way to stay in a regular contact with, and receive ongoing support from their tutors whilst on placement. They no longer had to

find a suitable time and place to be able to meet with their tutors to discuss their learning and show their progress. The e-portfolio allowed them to easily and instantly share their work, reflections, and evidence of learning with their tutors at any time and from anywhere, from any device connected to the internet, asking them for feedback and advice and showing them their achievements, making sure they were on track and heading in the right direction (section 10.3.1.2). These findings are consistent with those reported in previous studies across a range of professions showing that e-portfolios are useful and flexible tools that facilitate information sharing and discussion between students and their educators, fostering continuous learning and development (Bashook et al., 2008;Murray and Muir, 2011;Thanaraj, 2012;Slade et al., 2014;Hsieh et al., 2015).

In addition to being valued for allowing communication to be easier and quicker, the e-portfolio was also valued for placing more control in the students' hands with regard to selecting the content and materials to be communicated and shared with their tutors (section 10.3.1.1). Consistent with a previous study by Peacock and Murray (2009), many students in the current study valued the freedom, offered by the e-portfolio, to share their work with their tutors whilst appreciating its privacy settings that enabled them to choose what to share and to keep private the work that was not yet ready to be shared, depending on their needs and goals. It is possible, therefore, that this combination of privacy and freedom to share in the e-portfolio provided the students a sense of control and ownership over the content of their e-portfolio. It has been asserted that encouraging a sense of control and ownership of the content and privacy of e-portfolios motivates students to take an active role in their learning and allows them to create a representation

of themselves and their learning journey (Barrett and Wilkerson, 2004;Acosta and Liu, 2006;Shroff et al., 2013). This assertion appears to be supported by some tutors in the current study who believe that the *"e-portfolio is a part of [the students] and their development"* (section 10.3.1.1), as such, they should have the right to control and decide which part of their development they want others, including their tutors, to see. They also believed that being able to make such decisions will help them to "*develop and grow academically and personally*" (section 10.3.1.1).

With regard to the nature of information the students shared with their tutors through the e-portfolio, interestingly, few students shared not only their academic work but also personal and sensitive information about themselves. It appears that the private and confidential nature of the e-portfolio environment encouraged these students to share personal information about their interests, hobbies, personal and careers goals, and even their mental health issues with their tutors. The e-portfolio system at stake (PebblePad), like most of the current e-portfolio systems, is a private system held on a secure server, accessed only by users, and others can only access them if they have been granted permission from users to do so (Sutherland, 2008;Welsh, 2012). Inquiring into the motivation or the reason for which the students shared these personal information, it appears that it was their genuine desire to connect with their tutors on a deeper level and build a stronger personal relationship with them through increasing their awareness of any personal information they thought would have an impact on their learning and progress. This was evident from the significance they placed on the need for their tutors to *"get to*

know [them] as a person" not only as a student and understand their weaknesses and strengths in order to be able to support them (section 10.3.1.2). This finding supports previous research by Murray and Muir (2011) who investigated the tutors' practices of encouraging students learning through e-portfolio. The tutors in their research reported that the personal information that their students disclosed to them through their e-portfolio allowed them to know more about these students and deepened the relationship with them over time. This led them to give a more focused and personalised support and feedback in some cases. The findings from their study as well as the current study indicate that e-portfolios may hold a great potential for both tutors and students. For tutors, e-portfolios may enable them to see their students as whole beings, not just reduced to their academic performance and competencies, hence, know best how to support them and help them maximize their potential. For students, e-portfolios can be a useful platform for shy and introverted students to share their personal information and issues with their tutors as they may find it difficult to do so during face to face interactions. A research on introverted students by Maldonado et al. (2001) suggests that online environment may act as a safe platform for them to share their thoughts and any information about them and engage more fully than they would in face to face situations.

The findings of the current study show that some tutors also recognized the value of the e-portfolio as a communication tool. Those who were comfortable using mobile devices and technology in general considered the e-portfolio a convenient and flexible tool to communicate and interact with their students. For them, convenience was a priority, as one tutor put it "*Convenience is my one big thing"*. Their need for convenience was because of their busy schedule, and the academic and

personal commitments that was usually interfering with giving their full attention to support their students and provide them with the necessary feedback. This is consistent with the findings from a literature review that investigated the learning experience of nursing students in clinical education which found that the staff heavy workload compromised their communication and interaction with their students which in turn negatively impacted students' learning (Kaphagawani and Useh, 2013). In the current study, it appears that the e-portfolio was a partial solution to this problem for some tutors as it allowed them to communicate with their students using their time effectively. The web-based nature of the e-portfolio allowed them to have a constant and immediate access to the students' shared work from their own mobile devices no matter when or where they were, for example, during their breaks at work or while commuting on public transport. This provided them the opportunity to stay connected with their students, respond to their queries, constantly monitor their progress and engagement with the course, appreciate their efforts and praise their development, and provide instant feedback and support as necessary, at a time and place that best suited their busy schedule. These findings are consistent with those from a large survey with 118 staff working at different Further Education colleges in the UK (City and Guilds, 2015). The survey revealed that 69% of the staff reported that the ability to access the e-portfolio from anywhere and at any time allowed them to use it in more places outside their work and at non-traditional times of the day, to support their students without compromising their other commitments (City and Guilds, 2015). In the current study, it is possible that this flexible and convenient access to the e-portfolio have enabled some tutors to maintain a regular contact with their student particularly when they were away on

placements and provide them with the necessary support without having to "*wait for the tutorial to be available to them*" to do that (section10.3.1.2).

Despite all the communication affordances of the e-portfolio, a barrier that may have limited the students' use of e-portfolio for communication with their tutors whilst on placement was the limited or lack of access to computers. The technology infrastructure of some placement areas was not yet ready to support the implementation and integration of e-portfolios in practice. There was a limited number of computers and they were mainly used for patient care and/or administrative purposes by the clinical staff. This in turn limited their chances to use these computers to access their e-portfolios especially in busy days. These computers were also password protected, thus, a permission to use any available computer was always needed from the clinical staff. The same issue has been reported in previous studies showing that students are usually competing directly, and often unsuccessfully, with clinical staff over the available computers on placement in order to access their e-portfolio (Lawson et al., 2004;Bogossian et al., 2009;Bogossian and Kellett, 2010). While the students' use of their mobile devices to access their e-portfolios on placement could have solved this problem, having permission from nurses to use these devices seemed to be a challenge in some placements, as reported by some students in the current study. Similar to what has been reported in earlier studies, some nurses may not support or sometime display displeasure at the use of these devices by students in placement (Berglund et al., 2007;Bogossian and Kellett, 2010). This may be because they believe that using these devices would distract students from learning and providing patient care (Bogossian and Kellett, 2010) or they think it may look unprofessional to use these

devices in front of patients (Berglund et al., 2007). Based on the findings of the current study, it can be seen that the limited number of computers combined with the staff negative attitude toward the students' use of mobile devices on placement limited the students' opportunity to access and use their e-portfolio to immediately communicate, share their work and/or ask for feedback and support from their tutors whilst on placement.

11.2.1.1.2 Facilitating peer learning and support

Several students in the current study perceived the e-portfolio as a useful platform that provided them an opportunity to learn from and support each other, particularly when they were away on different placements and it was difficult for them to meet each other. As social beings, students may "learn more when they are able to talk to one another and be actively involved" (Routman, 2005, p.207). According to several learning theories, such as socio-constructivist, sociocultural learning, and Connectivism, learning is not a solitary process and does not occur in isolation, rather it is a dynamic, social activity that arises through social interaction between two or more people with different levels of skills and knowledge (Vygotsky, 1978;Lave and Wenger, 1991;Wenger, 1998;Eisenhardt and Santos, 2002;Siemens, 2005). Similar to previous studies (Lin, 2008;Mather, 2011;Stewart, 2013;Wakimoto and Lewis, 2014;Khales, 2016), the findings of this study revealed that the e-portfolio created and promoted a culture of interaction and discussion among the students through its social interaction features which enabled them to create and participate in different online learning communities within the e-portfolio (section 10.3.1.2). These communities were created by the students of their own volition and/or with the help of few tutors who seems to have computer skills and at the same time

appreciate the importance of interaction among students (section 10.3.1.2). These online communities, according to the theory of Connectivism by Siemens (2003), facilitated "interaction, sharing, dialoguing, and thinking together" (p.3).

The findings indicate that engaging in these communities seemed educationally and personally fulfilling for many students as noted by their positive attitude and comments regarding the opportunities they had from creating or participating in these communities. For example, many students were able to share their knowledge and experiences and exchange ideas with each other, read and comment on each other experiences, discuss the challenges arose from their reflective practice and how they addressed them, and engage in informal conversations about any personal struggles they were facing. Being a member in these communities was an opportunity for these students to tap into the collective "wisdom of the crowds" which acknowledges that communities can be more productive than any single individual when invited to contribute and cooperatively share their ideas and experiences (Surowiecki, 2004). Through sharing and discussion within these communities, the students had a chance to encounter and learn from the different perspectives and insights that their peers may have brought to these communities as a result of their diverse knowledge, experiences, backgrounds, views, and attitudes. This seems to be consistent with one of the major ideas of connectivism theory which posits that "Learning and knowledge rests in diversity of opinions" (Siemens, 2005, p.3). It is generally claimed that working with such diversity of opinions encourages learners to appreciate, compare different perspectives and ultimately leads them to synthesize multiple perspectives and collaboratively

construct new knowledge and understanding about an issue (Alterio, 2004;Tomei, 2008;Moore and Teather, 2013). This finding fits with Vygotsky (1978) popular concept of social cognition and Wenger's (2001) ideas of community of practice where a learning community is characterized as a space where learners support one another as well as challenge each other perspectives, leading to collaborative knowledge construction, thus, students become contributors and not just the recipients of knowledge (Tosh et al., 2006;Anderson, 2008). The advantages of being exposed to different perspectives from peers are also echoed in previous research (Pullman, 2002;Lawson et al., 2004;Coffey, 2005;Kimball, 2005;Lin, 2008;Mather, 2011;Stewart, 2013;Khales, 2016), which has suggested that the dialogue and the exchange of opinions that may follow sharing knowledge and experiences with peers in the e-portfolio can result in additional learning that enhances students' ability to integrate knowledge and skills (Mather, 2011) and may stimulate them to think beyond a surface exploration of thoughts and challenge their current practices (Coffey, 2005;Stewart, 2013). Social interaction and communication with others are advocated to mediate learning as knowledge is not simply acquired or constructed individually, rather it is co-constructed through communication and sharing of knowledge and experiences with others (Saunders, 1992; Leidner and Jarvenpaa, 1995;Tam, 2000).

The findings also show that some students declared a strong desire to publish or share their elective placement Webfolio with their junior peers who had not been on elective placement yet. This was possibly because they considered the Webfolio they developed about their experience in preparing and undertaking their elective placement to be a rich educational resource, considering all the materials and reflections they included as

well as the time and effort they spent creating it (section 10.3.1.2). It is for this reason, they believed that their Webfolios deserved to be shared, whether individually with their junior peers or published as a resource or exemplar for the next entire cohorts, in order to inspire them and allow them to learn from the different experiences they had and hopefully they would be more prepared for their placement. They seem to consider this as a form of peer mentoring but without a face to face interaction. Support for this may be found in a case study by Lin (2008) who explored the effectiveness of e-portfolios from the preservice teachers' perspectives. The students in that case study reported that although they did not interact with the former students in person, viewing their e-portfolio as a product was still useful because it gave them ideas and inspired them to improve their projects. In their study of the impact of formative peer assessment on veterinary nursing students, Brereton and Dunne (2016) maintain that seeing examples of peers' work may enable students to compare their experiences and self-assess their work against others which in turn provides them an opportunity to learn from the experience of their peers and improve their own work as necessary.

11.2.1.2 Supporting formative assessment (assessment for learning)

Over the past few decades, there has been a growing interest within higher education in moving towards formative assessment, the so called assessment for learning, which has been identified as a key focus for reform of higher education institutions in the 21st century (Higgins et al., 2002;Johannesen and Habib, 2010;Boud and Dochy, 2010;Deane et al., 2015). Formative assessment is believed to have a fundamental role to

play in students' learning and development because it enables them to evaluate their performance, progress, learning needs, knowledge gaps, and areas that need improvement (Yorke, 2003;Nicol and Macfarlane-Dick, 2006;Young and Lipczynski, 2007;Lewis et al., 2010). In an early study in which 250 articles were reviewed, Black and Wiliam (1998) conclude that formative assessment improves learning and achievement and "innovations which include strengthening the practice of formative assessment produce significant, and often substantial learning gains" (p.2). In line with previous studies (Duque et al., 2006;Pelliccione and Dixon, 2008;Ok and Erdogan, 2010;Granberg, 2010;Hung, 2012;Struyven et al., 2014), the findings of the present study seem to lend support to this conclusion, suggesting that the e-portfolio can act as vehicle for meaningful formative assessment through: (1) facilitating the provision of formative feedback and (2) promoting self-assessment, practices that encouraged the students to focus not only on the product but also the process of their learning.

11.2.1.2.1 Facilitating the provision of formative feedback

Formative feedback is considered a key element of the formative assessment process. It has a powerful capacity to enhance students' learning through signalling the gap between their current and the desired level of understanding and performance, which subsequently enable them to adjust their own learning and reformulate their work, if necessary, to improve its quality (Nicol and Macfarlane-Dick, 2006;Lizzio and Wilson, 2008;Heritage, 2011;Ash and D'Auria, 2012;Narciss et al., 2014).

Provision of formative feedback is in keeping with Vygotsky's (1978) concept of 'zone of proximal development' (ZPD) which

is defined as the place where a learner can achieve the desired level of understanding or accomplish a task with the appropriate guidance and feedback from a mentor or with a more experienced peer who can help them build on their current level of understandings. Therefore, students are meant to learn from formative feedback (Green et al., 2014). It is, therefore, comes as no surprise that the students in the current study placed a significant value on receiving formative feedback from their tutors and appreciated its contribution to their learning and development, similar to what has been reported in previous research (Duque et al., 2006;Peacock et al., 2010;Peacock et al., 2011;Parker et al., 2012;Deane et al., 2015). Receiving feedback was perceived positively by the students in the current study as an opportunity to, restructure their understandings; identify where they may have gone wrong and learn from their mistakes; obtain validation, encouragement and recognition from their tutors on their efforts and achievements, evaluate their own progress on the course and their level of attainment of the expected learning outcomes, and build on their achievement.

The findings of this study confirm previous the findings of previous studies (Duque et al., 2006;Peacock et al., 2010;Thanaraj, 2012;Boulton, 2014;Pakala and Bose, 2015), demonstrating that the e-portfolio could play an important role in facilitating the provision of formative feedback in ways that may have not been possible through traditional learning environments. It became abundantly clear from the findings of this study that the ubiquitous access to the e-portfolio combined with its communication capabilities offered a flexible means for providing more immediate and personalized feedback to the students. This finding corresponds to the general literature on online learning environments suggesting that the flexibility,

convenience, and openness of these environments have the potential to change the nature of feedback (Smits et al., 2008;Gray et al., 2010).

With regard to the ***timing of feedback***, the fact that the e-portfolio was advantaged by freedom from the constraints of time and place had a positive implication on the timeliness of soliciting and providing feedback. It seems to have provided an opportunity, first, to the students to ask for feedback contemporaneously to any activity or work they were undertaking from wherever they were (section 10.3.1.1), and second, to the tutors to respond and comment immediately to such request (section 8.3.3.2 and 10.3.2.1). This finding concurs with previous studies in which e-portfolios were perceived as quick communication vehicles that allowing feedback to be provided quicker than other methods such as paper portfolios and face to face meetings (Murray et al., 2006;Murray, 2006;Honey et al., 2010;Tonni and Oliver, 2013). In the current study, immediate feedback was perceived, by some students and tutors, to be particularly important for the students' learning and progress because if it can be quickly acted upon by the students it would have the potential to quickly diagnose and reduce any misconceptions or misunderstandings they might have and help them to act immediately on their weaknesses (section 10.3.1.2). However, it appears that providing immediate feedback to the students was problematic for many tutors due to the limited time they had because of their busy schedule. They found it not always feasible to respond promptly to the students' queries or comment on their shared work in the e-portfolio. Similarly, the advisors in two medical schools in the study by Bashook et al. (2008) found it difficult and unrealistic to respond to the students' posts in the e-portfolio in a timely way because of their heavy workload and

that led them to view the e-portfolio as a time consuming and inefficient way to communicate with their students as it added to their workload.

With respect to the ***personalization of feedback***, the findings suggest that the e-portfolio facilitated the provision of a more personalized and focused feedback to the students, as perceived by some tutors. The e-portfolio offered the students the space and the opportunity to make their learning and achievements more visible and transparent through sharing their work, evidence of learning and reflections with their tutor. This seem likely to have provided the tutors some information and idea about their students' current understandings and progress towards achieving the desired learning outcomes. Having such information enabled them to formatively assess the students' current performance against the desired learning outcomes and offer them the support and feedback that was specifically tailored to their actual and current needs (section 8.3.3.2). This finding is consistent with a randomized controlled trial by Spickard III et al. (2006) where third-year medical students were randomized to a received feedback via the e-portfolio or via the traditional methods (printing their work for their teachers). The teachers in this trial reported that they were able to give more detailed and personalized feedback using the e-portfolio than the traditional method because the e-portfolio gave them a more comprehensive picture of the students' documentation, clinical encounters and performance. The findings of this randomized trial as well as the current study seem to suggest that the more open and transparent students are in sharing their work, experiences and any issues affecting their learning and progress, the more likely their tutors will be able to give them a more personalized and detailed feedback.

The current study has also shown that the tutors' ability to provide immediate and personalized feedback through the e-portfolio was perceived to allow for a more responsive approach to the students who may be struggling in the course for any reason and in need for remediation (section 8.3.3.2). This is in line with the findings from a previous study by Murray and Muir (2011) who reported that the e-portfolio helped the tutors to provide a personalized assistance and support particularly to the students who suffered from dyslexia and those who struggled because their first language was not English. Similarly, in the current study, being able to constantly access the students' e-portfolio and look into their submissions was seen by some tutors as a useful way to spot more quickly those who had issues affecting their learning and progress, and offer them a personalized support and feedback quickly enough to be useful to them in overcoming these issues. This was especially important for the students who were having difficulty meeting the desired learning outcomes because they were struggling with selecting the appropriate evidence or judging its relevance and sufficiency to certain learning outcomes. This has resulted in them becoming reluctant to attach and match the evidence gathered to the corresponding learning outcomes in the e-portfolio, as shown in section 8.4.1. If that happens, an e-portfolio can become a merely a collection of items thrown together with no connection between them, as reported in early studies (Pitts et al., 1999;Zou, 2003). For some tutors in the current study, the e-portfolio could offer a partial solution to this issue by allowing them to immediately respond to the individual needs of these students and initiate a dialogue with them asking "*what's going on. Why there is only piece of evidence attached to all seven learning outcomes here and what is it that you don't understand"* (Tutor 3 in section 8.3.3.2). This dialogue may

provide an opportunity to the students and their tutors to work together to find ways to improve and solve this issue. Being such responsive to students' needs is believed to help students become more engaged in their learning particularly those who are shy or feel reluctant to approach or ask their tutors for help (Coates, 2007;Yam, 2010).

However, the findings shows that issues such as the students' perceived complexity of the e-portfolio system, their poor or underdeveloped digital literacy and the tutors' perceived inefficiency of the e-portfolio system at stake negatively impacted their perception of the usefulness of the e-portfolio as a tool for formative feedback. The students' confusion and lack of understanding of the different features within the e-portfolio made them perceive it as a complex and not a straightforward system. This in turn made them reluctant to use it to share their work or ask for feedback from their tutors. Previous studies reported that e-portfolios can difficult to comprehend at first and can be seen as a challenging experience due to technical issues particularly in the early stages (Pincombe et al., 2010;Vernazza et al., 2011;Cordier et al., 2015). Moreover, the current study suggests that the poor digital literacy skills of some students appears to have hampered their ability to use the e-portfolio to share their work with their tutors and ask for feedback and/or view comments on their work from their tutors. Not all the students were digital savvy as expected. This finding has been confirmed by Peacock et al. (2011) who concluded that most students need guidance on how to use their e-portfolio to support their learning. Apparently, this finding goes against the assumption that all students are digital natives and they know how to use all the e-learning tools and technologies introduced by universities (Bennett et al., 2008;Selwyn, 2009). This issue whether or not students are digital natives raised a

question among the curriculum planners in the current study as whether the use of e-portfolio should be a mandatory requirement for all students. Some of them argue that making it mandatory would discriminate against students who are not comfortable using technology thus it should be optional.

Lastly, it was not a surprise that tutors' perception of the inefficiency of the e-portfolio system have negatively impacted their ability to effectively use the e-portfolio to monitor their students' progress, manage their submissions and provide them with formative feedback. The findings suggest that this perceived inefficiency of the system was caused by two reasons. Firstly, the rigid structure of the e-portfolio system made it difficult for them to view and organize the students' submissions in a way that would make it easier for them locate and comment on these submissions. Secondly, the unreasonably detailed steps required to view students' shared work and provide feedback. The number of clicks the tutors had to make to find what they needed (more than 3 clicks) resulted in them perceiving the e-portfolio as cumbersome and inefficient tool that hindered their productivity and ability to provide timely feedback to their students. Difficulties when providing feedback in the e-portfolio was also reported in previous studies (Murray, 2006). Oakley et al. (2014) in their study on the preservice teachers' use of an e-portfolio in their first year, found that lack of lecturers' confidence in their technical and pedagogical skills to use the e-portfolio resulted in insufficient feedback given to the students on their work. It is of important to students and tutors to be able to find information quickly in the e-portfolio and be able to be familiar with the different functions and features within the system. A tool that is difficult to use can lead to frustration and ultimately disengagement (Murray, 2006). In general, guidance, support and training are required for tutors

in order to help them grasp the functions and opportunities available through e-portfolios to help their students (Peacock and Murray, 2009).

11.2.1.2.2 Promoting Self-assessment

Self-assessment is another essential component of formative assessment. If feedback is considered one side of the coin; self-assessment is regarded as the other side of the coin in formative assessment (Black and Wiliam, 2004;Stefani et al., 2007;Peacock et al., 2009). Consistent with the findings of previous studies (Pelliccione and Dixon, 2008;Lin, 2008;Parker et al., 2012;Mobarhan et al., 2014), the results of the current study suggest that an e-portfolio can be a useful mechanism to engage students in the practice of self-assessment, via encouraging self-reflection (sections 8.3.3.1 and 9.3.1). Several authors have regarded reflection as an integral part of the process of self-assessment (Buzzetto-More, 2010;Rolheiser and Ross, 2000;Belgrad, 2013;Wolf and Dietz, 1998). Therefore, it came as no surprise that the reflective nature of the e-portfolio played an important role in engaging the students in a process of self-assessment through prompting them to iteratively look back and reflect on their collection of evidence and recorded experiences (section 9.3.1). The process of looking back on what they have created and experienced, also known as "reflection on action" (Schön, 1983), involved the students stepping back and thinking in more details about: how each piece of work contributed to their learning and development, the meaning of their experiences, their progress towards the achievement of these learning outcomes, what have been learned and what yet to be learned in order to meet these outcomes, any gaps in their knowledge and skills and areas needed improvement. Engaging in this iterative reflection

allowed the students to develop a better understanding of themselves as learners, their weaknesses and strengths, and their current knowledge and understandings, hence, refine their work and make improvement accordingly (section 9.2.2.1). This finding supports the assertion that ”The role of iteration, not as a repetitive mechanical task but as a deeply reflexive process, is key to sparking insight and developing meaning…connecting them with emerging insights, progressively leading to refined focus and understandings” (Srivastava and Hopwood, 2009, p.77). In general, these findings are consistent with those of others, demonstrating that the reflective component of the e-portfolio, where students are able to review, revise and reflect on their work and experiences, enables for greater awareness of personal growth, self-knowledge, and self-revelation (Brown, 2002;Pelliccione and Dixon, 2008;Roberts, 2009;Gerbic et al., 2011;Thanaraj, 2012;McWhorter et al., 2013;Oakley et al., 2014). Based on the findings of these studies and the current study, it can be argued that self-assessment can be a valuable tool to foster reflective practice and professional development as it allows students to develop a new awareness of themselves not only as students but also as “emerging professionals” capable of critically reflecting on their current performance, obtaining an insight into their own strengths and weaknesses and engaging in self-development (Zubizarreta, 2008;Van Wesel and Prop, 2008;Kardos et al., 2009). As such, self-assessment is regarded as an important skill and a defining graduate attribute for career development and management (Taras, 2001;McDonald and Boud, 2003;Levett-Jones, 2007;NMC, 2008;Al-Kadri et al., 2012). Costa and Kallick (2003) assert that “If students graduate from our schools still dependent upon others to tell them when they are adequate, good, or excellent, then we have missed the whole point of what

education is about" (p.3). It can be reasonable, therefore, to assert that the capacity of the e-portfolio to promote self-assessment through its reflective component makes it a useful tool for self-discovery that promotes reflective practice rather than a mere repository of materials. However, this cannot be achieved if students do not understand the purpose of the e-portfolio or fail to recognize its reflective capability, as reported in a study on dentistry students by Vernazza et al. (2011).

The findings of the current study indicate that the structure and features of the e-portfolio were perceived to play a role in facilitating the process of self- assessment and promoting reflective practice. McKinney (1998) asserts that reflective practice allows learners "not only [to] step back from experiences but also to form connective links to rethink past experiences in the context of new ones and ideally to develop ways of applying those insights to future endeavours" (p, 86). The e-portfolio allowed the students in the current study to have all their evidence and other products in one place, offering them a comprehensive picture of their learning experience. This seems to have enabled them to not only self-assess the progress they have made over time but also constantly examine and reflect on their own understanding of the connections between their seemingly disparate learning experiences. As explained in section 7.3.2, having all their work in one space could be messy and this seems to have forced many students to spatially organize their different pieces of them and represent the relationships between them in a meaningful way for them. This was clearly evident when many students used the tagging and hyperlinking functionality in the e-portfolio to organize, chunk, link and group their pieces of evidence together and/or link them to the corresponding learning outcomes, clinical competencies, units, and modules (section 7.3.2 and 8.3.4).

Labissiere and Reynolds (2004) argues that the process of hyperlinking materials forces students to link their new learning to their prior knowledge and experience and facilitate the development of metacognitive skills. The findings from the online observation show that many students were linking a single piece of evidence to different learning outcomes or other areas and linking multiple pieces to a single learning outcome or area. This can be attributed to their need to see the wider picture of the curriculum and overcome the perceived compartmentalization between the modules or between theory and practice. For example, one of the students (section 8.3.4) linked a piece of evidence collected from placement to a clinical competency and a modular learning outcome, trying to link theory to practice. This finding supports the finding of a pilot study on pre-service music education students by Lind (2007) who reported that the reflective aspect of the e-portfolio encouraged the students to actively think about their experience as both student and teachers, and create connections between their coursework at the university and practicum work as teachers in order to improve their teaching practices. The process of making connections and creating links between learning experiences through the e-portfolio was perceived by many students to be "thought provoking" as it invited a deeper engagement with their work and re-articulation of the content in order to give coherence to their learning experience and also increase their awareness and understanding of the learning outcomes (section 7.3.2). This shows that linking evidence to the learning outcomes in the e-portfolio provided evidence of more than showing that the students have achieved the learning outcomes, rather, it shows that they are able to construct their own knowledge and shape their own meaning. This fits well with the constructivist learning

their which assumes that students are active participants in their own learning and constantly trying to make meaning of their learning experiences (Duffy and Jonassen, 2013;Wang, 2015).

11.2.1.3 Scaffolding the reflective process: structured versus unstructured reflection

Despite the apparent benefits of reflection, which were discussed in the previous section, the findings show that some students, were still reluctant, and possibly anxious, to engage in self-reflection. Similar findings were also reported by previous studies (Snadden et al., 1996;Karlowicz, 2000;Kardos et al., 2009). The existing literature places a great emphasis on the importance of being a reflective learner who is able to critically evaluate their own learning and identify areas where further development is required, in order to support their own personal and professional learning. In fact, the ability to reflect has been increasingly regarded as an essential attribute and a defining characteristic of professional competence (Duncan-Pitt and Sutherland, 2006;Finlay, 2008;Mann et al., 2009;Bulman and Schutz, 2013). The skill of being reflective, while vital, is complex and can be difficult to acquire, as it does not come naturally or effortlessly to everyone (Karlowicz, 2000;Duncan-Pitt and Sutherland, 2006;Kardos et al., 2009). A study by Roberts (2009) on architecture students concluded that not all the students are predisposed toward being reflective, because some are naturally more reflective than others, thus, they are likely to vary in their abilities and attitudes toward reflection. Therefore, it was not surprising that some of the students in the current study did not feel confident about their ability to reflect on their experiences and found it challenging when asked to

complete a piece of reflective writing (section 9.3.2). This seems to be attributed to their lack of experience and familiarity with the concept of reflection as this was their first time to write reflection. They also did not know what "being reflective" meant or entailed, as for them, *"writing reflection [was] strange … different than writing academically"* (section 9.4.4).

Nonetheless, previous studies suggest that reflection is a learned skill and can be developed through appropriate scaffolding (Driessen et al., 2005;Roberts, 2009;Honey et al., 2010). Scaffolding students to develop the capacity to reflect can take many forms, one of which can be using technology-enhanced learning systems with which students can interact and work at their pace (Puntambekar and Hubscher, 2002). In this regard, the findings of the current study suggest that the e-portfolio played an important role in scaffolding the students' ability to reflect and guiding the process of reflection through its inbuilt reflective templates. Similar to previous studies in nursing and medical field (Pink et al., 2008;Peacock et al., 2009;Roberts, 2009;Honey et al., 2010), several students, particularly those who were struggling with writing reflection, valued having a variety of structured reflective templates within the e-portfolio system and seem to have benefitted from using them. This may be because that these each template comprised a set of prompt questions that prompted them to think about their experiences and offered them a structure of what they "*have to reflect on"* (section 9.3.2). Having such structure seems to have made their attempts at reflection easier and decreased their feeling of uncertainty of *"not know where to start"* (section 9.3.2). Moon (2006) points out that having a framework of questions can help students to get started on

reflective writing and eliminating their fear of facing a blank page, unsure of what to write.

The findings also demonstrate that the use of these reflective templates was believed to lead to deeper reflection than might be possible in unstructured formats of reflection, as reported by some students. This was attributed by some students to the analytical nature of prompt questions in these templates which they believed to have stimulated them to dig deeper into their experience more than if they relied only on the random questions that they would have thought of themselves. Jasper et al. (2013) assert that the key to being a reflective learner is to ask the appropriate questions that enable oneself to think deeply and speculate critically about one's experience. Many students including those who were struggling and those who wanted to improve their reflection believed that using these templates helped them to avoid the pitfall of asking merely descriptive questions such as "What I have learned. What I have done" (section 9.3.2). This finding is supported by previous studies which suggest that students often need some form of intervention such as hints and prompts to encourage a level of reflection that goes beyond the basic level of description (Samuels and Betts, 2007;Smith et al., 2007;Roberts, 2009). On the contrary, in their study on first year specialist doctor trainees, McNeill et al. (2010) found that the provision of prompt questions did not always have the desired effect in leading to a deeper level of reflection. The levels of reflection scoring shows that many of the trainees did not progress beyond the point of basic description of their experiences. However, they reported that it was not clear whether factors such as the limited time the trainees had in clinical setting affected the amount and quality of their reflection. Although the current study was not designed to provide an exhaustive

investigation of the content of students' reflection, some improvement in the students' reflective writing and their capacity to reflect was noted by some tutors and students in the second year. They attributed this improvement to their use of the reflective templates in the e-portfolio for a considerable amount of time during the first year, which they believed helped them to build their reflective writing skills and encouraged them to think more about the process of reflection (section 9.3.2). It is possible that having such templates in the e-portfolio may encourage students to view their e-portfolio as a useful tool for building their capacity to reflect and reduce their resentment to self-reflection.

It was interesting to note that some students, over time, became gradually less reliant on the use of inbuilt templates in the e-portfolio to reflect on their experiences. A possible explanation for this may be that the students' confidence in their capacity to reflect has grown over time and the templates were then viewed *"as a guide not as a be-all and end-all"* (section 9.3.2). The degree to which they became less reliant on these templates varied among the students. Some of them started to adapt these templates through adding their own questions to suit their own purposes and reflective capacity, whereas, others who became more confident, created their own templates using the "journal entry" tool in the e-portfolio or moved completely from structured to unstructured reflection. The students' ability to gradually reduce their need for these templates as a scaffold seems to correspond well with one of the key features of scaffolding which is known as "fading" (Rogoff, 1990;Wang, 2014;Masters, 2013). It has been argued that a failure to remove the scaffold means that the learner may fail to internalise the processes which would help them to competently

perform the task or develop the skill (McNeill et al., 2006;Pea, 2004;Davis, 2014).

Despite the aforementioned benefits of having these reflective frameworks within the e-portfolio, they were not found to be without their limitations. The findings suggest that using structured reflective templates could negatively influence the ability to reflect for those who prefer unstructured form of reflection. This can be explained by the fact that they viewed these templates as being too directive, therefore imposing a restrictive structure on their thoughts which seems to limit their self-expression. Instead, they preferred the free style or unstructured form of reflection where they just could let the words flow out without feeling they were answering questions. It is most likely that the students who preferred the unstructured form of reflection were not new to the concept of self-reflection and had some experience in writing reflection before coming to the university, for example, student (2-MH) used to write reflection on her learning and achievement in the form of letters to herself when she was doing her A levels (section 9.2.2.1). So asking them to follow a particular structure and respond to certain prompt questions within a particular framework was a challenging as they believed this could break their experience or story into incoherent fragments and affect the authenticity of the reflective process.

Previous studies have reported similar findings, showing that imposing a structured reflective framework or template may have a negative impact on students' reflective writing (Garrett and Jackson, 2006;Ruiz et al., 2009;Roberts, 2009;McNeill et al., 2010;Goodyear et al., 2013). These studies found that forcing students to use a particular reflective template, model or format to write their reflection may shift their focus from the

real purpose of reflection, which is constructing meaning from their experience. Instead, they may worry about fitting their experience to the particular model of reflection, rather than using it as a guide to creatively and authentically reflect on their experience. As a result, the reflective output might be a distorted, rather than a true version of their experience or the reflection may turn into a box ticking exercise. However, the current study seems to differ from the above mentioned studies in the sense that students were not forced to use a particular template, in most cases. The e-portfolio at stake included a variety of templates that ranged from simple unstructured templates to a more structured. They were only there as scaffolding tools and their use was optional. Even if there was a reflective assignment and the students were required to use a reflection model to write their reflection, they were given the opportunity to choose the template or the model that fit with their own needs, reflective style and ability and the level of scaffolding they needed.

11.2.1.4 Allowing for multiple modes of presentation and self-expression

The current literature reveals that e-portfolios come with promises of overcoming the limitation of their paper counterparts by providing a technology that enables students to present their work and construct their knowledge in a variety of formats, instead of being limited to paper format only (Avraamidou and Zembal-Saul, 2002;Barrett, 2005;Ferns and Comfort, 2014). The findings of the current study lend support to this notion suggesting that the electronic nature of the e-portfolio put no limits on the format in which the students were able to record, present and reflect on their work. It allowed them to incorporate and present their work not only in textual

data, but also in a multimedia format such as videos, audio files, photos, hyperlinks, slide presentations, and mind maps (section 8.3.2 and 9.3.3). This seems to have allowed for multiple modes of both presenting learning and expressing feelings and thoughts. Former studies have reported similar findings showing that the multimedia capabilities of e-portfolios were appreciated because they opened up new possibilities for the students to more creatively construct meaning from their experience and to showcase their learning (Ruiz et al., 2009;Pincombe et al., 2010;Gómez et al., 2013;Tonni and Oliver, 2013). It has been argued that the process of combining different media together can provide higher-impact learning experiences than simply putting words on paper (Barrett and Carney, 2005;Reynolds and Rice, 2006;Cambridge, 2010;Silva et al., 2015). The current study seems to support this argument and add that using variety of media through the e-portfolio is thought to enhance the students' *"motivation and creativity in reflecting on their learning and producing good assets"* (section 9.3.3).

The findings show that the opportunity to present evidence of learning and achievement in multiple modes, such as videos, images, audios, and texts, through the e-portfolio seems to have added elements of creativity and authenticity to the presentation of learning experiences. This may be because, according to many students, presenting evidence in multimedia format can be "*very engaging"* and *"will always enable people to follow where you're going because seeing is believing"* (section 8.3.2). This view was also shared by some tutors in the current study who enjoyed reading and looking through the elective placement Webfolios the students created using multimedia. However, creating and presenting evidence in different forms involved more than just making work visually

appealing, rather, it required the students to synthesize and integrate the information they gathered from different sources and make connections across the different media they used in order to make sense of their experiences and present a comprehensive story of their learning and achievements showing the multifaceted nature of their learning experiences. Therefore, presenting learning in multiple modes can be an overwhelming and time consuming process. It is for these reasons as well as the lack of IT skills the majority of the students in the study by Oradini and Saunders (2007) preferred to present their evidence in a textual format with only a small minority preferred to use multimedia. But for the students in the current study, creating multimedia evidence despite difficult and overwhelming, seemed to have added elements of enjoyment and interest to the process of developing the e-portfolio, and, in particular, the elective placement Webfolio. This can be linked to the fact that the process of creating multimedia in the e-portfolio allowed for multiple senses to be activated simultaneously and, therefore, may have created a more enjoyable learning environment for the students. It is for this reason that the use of multimedia is regarded as an effective strategy for keeping students actively engaged in and intrinsically motivated to use their e-portfolio (Barrett, 2005). Support for this finding may be found in a study by Driessen et al. (2007), who claimed that the electronic presentation of the e-portfolio and its multimedia nature encouraged students to spend more time working on it, in comparison to its paper counterparts. These findings indicate that enjoying the payoff from creating multimedia evidence seems to outweigh the extra time and effort required to develop an e-portfolio.

Similar to previous studies (Reynolds and Rice, 2006;Silva et al., 2015), the findings of the current study suggest that several

students valued the opportunity offered to them by the e-portfolio to integrate multimedia elements such as pictures and videos to support their written reflection, allowing them to express themselves using multiple modes. One possible explanation for this may be that pairing written narrative with visual elements such as pictures appears to have enabled the students to show more details about the context of the experience or the situation upon which they were reflecting and make it more realistic without the need to write more words as they believed *"a picture is worth a thousand words"* (section 9.3.3). Another possible explanation may be that integrating multimedia elements served as prompts for them to write their reflection, as reported by the students, *"just have something visual so I can start turning that into text"* (section 9.3.3). These findings resonate with findings from other studies, mostly in the field of teacher education, in which self-recorded digital videos of students' performances were used together with text to support the students' reflections (Leijen et al., 2009;Yaffe, 2010;Rich and Hannafin, 2009;Calandra et al., 2009). These studies suggest that the added value of using self-recorded videos for reflection is that they allow students to fully recall their performance, creating a more realistic and authentic view of their experience and allow them to develop a more detailed representation of their learning and themselves as learners. In another study, Calandra et al. (2009) compared the written reflections of a group of students who used a combination of video and text, to a group of students who used only text for reflection. They found that the group who used videos with text produced higher levels of reflection allowing them to deeply address various aspects of their experience, than the other group. They attributed this to the fact that the meaning the students created from their experience was multimodal and

thus multifaceted. On the contrary, there was no indication from the students in the current study whether integrating these multimedia elements has enhanced the quality of their reflection. It may be possible that the student liked integrating multimedia only because it made them write less than they would do with textual only reflection or because some of them were struggling with writing reflection. A previous case study by (Holland and Purnell, 2012) reported that the use of multimedia to record reflection did not produce favourable outcomes in terms of deepening the students' reflections (Holland and Purnell, 2012). In this case study, 33 first year Information System students were asked to produce two pieces of reflection: a text only reflection and a multimedia reflection, in which videos, audio, text and/or images could be combined using the Moviemaker software. When the two reflections were compared, the multimedia reflection was found to be more descriptive than the written reflection. None of the students used videos or voice recordings, as they did not want to waste time and effort in learning how to use the Moviemaker software. Their multimedia reflection only contained PowerPoint presentations, with some clipart pictures and voice narration that had been read from a pre-prepared script, rather than expressed unscripted and spontaneously. Thus, the researchers concluded that the technology did not enhance the students' level of reflection, rather, it may have constrained the reflective process. However, the male students in their study claimed to have enjoyed creating the multimedia reflection more than the written reflection. The researchers argued that these students may have liked the multimedia reflection more because of a lack of confidence in their written skills. These findings shed the light on the importance of providing guidance for students on how to

use and combine different types of media to support and enhance the quality if their reflection.

It has been argued that students differ in the ways they prefer to present their knowledge and express what they know and how they feel and that could be derived by their learning style (Chambel and Guimarães, 2005;Sheahan et al., 2015). However, it is not clear from the present study whether the students' choice of a particular mode(s) of expression or presentation of learning in the e-portfolio was derived by their preferred learning styles or developed intelligences. But what was clear from observing the students' Webfolio was that the majority of the students, with their different learning styles, used pictures and videos to creatively reflect on their learning and showcase their achievement of the learning outcomes during their elective placements. The reason that they all used multimedia in their Webfolios, whether or not it matched their learning styles, could be the encouragement they received from their facilitators with regard the needs to be creative in their presentation of their evidence and reflection in their Webfolios, using a variety of media (section 6.2.6.5). On this issue, a study by Nielsen et al. (2015) argued that students should stop labelling themselves with a particular learning style and should not remain within the comfort zone of this style because they may be missing the opportunity to learn in other ways. They found that the implicit belief that every student has only one particular learning style, and, therefore, encouraging them to express themselves and show their learning through one particular mode of expression in their e-portfolio, could inhibit their reflective capacity and subsequently may inhibit their use of the e-portfolio as reflection tool. Their argument was based on Kolb (1984) and Honey and Mumford (2000) assertion that learning styles are not fixed characteristics of students, rather

they are shaped by experience and may change over time and across different tasks and situations. Therefore, while it is important for students to recognise their preferred learning styles, and be able to flexibly switch between or mix different styles if necessary, in order to be able to express themselves and represent their knowledge in a variety of ways, and thus, maximize their learning potential. It is, therefore, suggested that there is no one mode of presentation or expression that is ideal for all students, thus, allowing for multiple options is of fundamental importance (Carlin-Menter and Shuell, 2003;Ralabate, 2011). Thus, it is reasonable to say that an e-portfolio, with its multimodality nature, can be a useful tool to encourage students to push the boundaries of their comfort zones and to try out different styles of expressing themselves and communicate their work to others, using a variety of media.

What is also of interest from the findings of this study is that being able to use multimedia in the e-portfolio to showcase learning and achievements seems to have encouraged some students in the current study to consider their e-portfolio, or part of their e-portfolio, as a professional tool that would have the potential to increase their employability when applying for jobs after graduation (section 10.3.1.2). The ability to integrate photographs and videos and add hyperlinks to connect their work in their elective placement Webfolio made the students feel that they were building their own personal website which they could share with prospective employers when applying for jobs. Similar to previous studies (Kim, 2001;Lin, 2008), the present study show that the visual presentation of the Webfolio was considered, by the students, to be a more effective and creative way to sell themselves and to show their employability

skills to their prospective employers, in comparison with the standard textual CV. This visual element means that employers would be able not only to read but also to *"see the pictures…see the video [they've] created, and…see the learning outcomes…see the insight visits [they've] been"* (section 10.3.1.2). Showing employers authentic examples of their work and tangible evidence of what they have done and know, through the e-portfolio, can make them stand out from the crowd and put them in *"a really good stead"*, a perception shared by some students and tutors. These findings support the existing literature suggesting that e-portfolios can serve as personal branding tools that gives students an extra edge over others and reassure employers of the students' possession of the desired knowledge, skills and other attributes applicants (Stefani et al., 2007;Lowden et al., 2011;Pelet, 2013;Guder, 2013). It is equally important that employers are familiar with e-portfolios and are willing to engage with them, however, in nursing, the employers' levels of engagement and satisfaction with e-portfolios, are, as yet not fully clear (Gray, 2008). This issue deserves further exploration, in order to investigate several issues, such as the willingness of employers to receive e-portfolios from nursing graduates as a part of the recruitment process, their perceptions of the usefulness of the e-portfolio in enabling them to differentiate between the candidates in an effective and meaningful way, and any issues that may affect their acceptance and engagement with the e-portfolio as a job seeking tool.

11.2.2 Challenges and contradictions

Contradictions, according to Engeström (2001), are "historically accumulating structural tensions within and between activity systems" (p. 137). These contradictions manifest themselves as

problems, conflicts and clashes, however, they can be source of development (Kuutti, 1996). Engeström (2001) identified four types of contradictions: primary, secondary, tertiary and quaternary. Primary contradictions which arise within the components/nodes of the activity system: subject, object, instruments, community, rules, and division of labor. Secondary contradictions occur between the components of an activity system. Tertiary and quaternary contradictions occur between different activity systems. The findings of the current study revealed that mainly secondary contradictions emerged between the different elements of the context. Some of these contradictions, especially those between the subjects (students) or the community (tutors) and the tool (e-portfolio) seem to have had a less or short term effect on the use of the e-portfolio as they been resolved over time. Examples of these are those caused by technical issues and unfamiliarity with the e-portfolio system as discussed before in section 11.2.1.2. Yet, other contradictions, particularly those between the subjects (students) and division of labour/community (tutors) seem to have had a detrimental effect on the role of the e-portfolio to facilitate the students' learning. First and foremost is the contradiction between the students' expectations and the tutors' perception of how frequent feedback should be given. As will be discussed below, this contradiction affected the students' motivation to use of the e-portfolio.

11.2.2.1 Infrequent feedback: incompatibility of expectations

The findings of this study show that while there was an unanimous agreement on the significance of receiving formative feedback for the students' learning, a mismatch existed

between the students' expectations and the tutors' perception of how frequent this formative feedback should be having used the e-portfolio. Some students perceived the feedback they received from their tutors on their submitted work in the e-portfolio to be less frequent and sometimes non-existent. This may be because they expected that sharing their work through the e-portfolio would increase their opportunity to receive more frequent feedback from their tutors and that their progress on placement would be continuously monitored. They believed that their tutors *"meant to be looking at it [the e-portfolio], and see what [they're] doing on there",* particularly when they were in their first year (section 8.4.1). It is generally assumed that when students make an investment in their learning, for example, developing an e-portfolio, they expect a return on this investment, for example, receiving a formative feedback that can support their reflection and enable them to achieve their desired learning outcomes (Herman and Kirkup, 2008;Sandars, 2009;Parker et al., 2012). This perceived inadequate or infrequent feedback appears to have led to some unmet needs and expectations on the part of the students. This seems to have negatively impacted their motivation to use the e-portfolio and led them to question its value as a feedback tool (section 10.4.1). Moreover, knowing that their work on the e-portfolio was not being looked at or commented on made them feel frustrated and disappointed, to the extent that they stopped sharing more of their work with their tutors or attaching evidence to the learning outcomes. These findings suggest that using e-portfolios does not necessarily lead to increase the frequency of receiving feedback from tutors as might be expected by students, as reported by previous studies (Murray et al., 2006;Vernazza et al., 2011;Parker et al., 2012;Belcher et al., 2014).

While the students expected that everything they shared in the e-portfolio should be looked at and commented on, some tutors expressed the view that the provision of frequent feedback through the e-portfolio was not always necessary or could not be given all the time on every piece of evidence the students shared with them. This is echoed in previous studies (Bashook et al., 2008;Laryea, 2013). Several factors were cited by the tutors cited that influenced their ability to provide feedback as frequent as expected by the students. *First*, the underlying assumption that the students were adult learners, appears to have lessened their opportunity to receive more frequent feedback from their tutors as they desired. The expectations of some tutors that the students were adult learners, thus should be autonomous, self-motivated and should operate independently, seems to have led them to believe that their role was not to be *"checking on them [student] every five minutes"*, rather, they believed that feedback on work and progress would be given during the pre-planned tutorials or interviews over the year, for example, one of the tutors said *"I don't check it in between. I will have a look when we have the yearly meeting, well, six-monthly meeting"* (section 10.4.1). However, it is generally agreed that adult learners still need to receive frequent feedback that they are en route to achieve their goals and improve their performance, otherwise they may lose their motivation (Knowles, 1984;Goode, 2011;Brunswick, 2012;Dearman et al., 2014). This meant that providing frequent feedback through the e-portfolio was seen by some tutors as not necessary. However, this view appears to be opposing the views of the curriculum planners and other tutors who assert that the tutors were expected to monitor what the students had shared with them in the e-portfolio and help them to recognize areas in which their work needed improvement (section

6.2.7.2). This inconsistency between the tutors and curriculum planners regarding the frequency of feedback may indicate absence of clear rules and regulations or lack of the tutors' awareness of any existing rules related to that matter.

Second, it became abundantly clear that feedback was given only on the mandatory work. Some tutors were likely to provide timely and detailed feedback only when the submitted work was mandatory or had been submitted for summative assessment, but when the work was submitted for formative assessment, only few students received comments from their tutors. That was evident from the online observation of the students' e-portfolios and from the tutors comments, for example, one tutor said *"[I'm] not going to look at it throughout, unless it's summative assessment", a*nother said *"they've [students] uploaded the mandatory sessions, so that' the only thing I've looked it".* This resulted in the students feeling that they were not receiving adequate feedback to help them improve their work and ensure they were on the right track. Using e-portfolios for summative feedback only may demotivate the students as reported in a study by Wickersham and Chambers (2006). The students in their study quickly became frustrated after one semester of working with a portfolio as an assessment tool, as they could not see any tangible benefits for their learning. There are several possible explanations as to why these tutors provided feedback only on mandatory work. One explanation may be that the mandatory work such as risk assessment questionnaire and elective plan was seen by the tutors as more important than other work the students shared in the e-portfolio because their completion was compulsory as they were part of the students' assessment. On the other hand, the non-mandatory work the students shared voluntarily with them was seen as less urgent for the tutors because it could be viewed and discussed later in the facilitated group and tutorial sessions.

Therefore, a priority to provide feedback was given to the submitted mandatory tasks. Another explanation may be the difficulty for the tutors to find sufficient time to review and comment on all the work that had been shared by the students, given their busy schedule and multiple responsibilities. With the number of the students that each tutor was responsible for, and the lack of selectivity shown by some students in terms of sharing everything with them, the tutor felt it was overwhelming and beyond their capacity to provide feedback on every single piece of evidence the students shared with them. Likewise, previous studies, in various disciplines, suggest that time pressures and heavy staff workloads are important factors that may divert tutors' attention from effectively engaging with their students' e-portfolios and subsequently influence their ability to provide frequent feedback (Currant et al., 2006;Duque et al., 2006;Procter and Whatley, 2011;Bashook et al., 2008;Laryea, 2013)

The students believed that it would have been useful if their mentors on placement could use the e-portfolio and had access to the evidence they had been gathering and linking to the competencies. The mentors were not included in the current study, because at the time of the study it was decided by the school to not to introduce the e-portfolio to them, partly due to logistical and institutional reasons. The students believed that if the mentors had access to the e-portfolio, feedback and communication may have been more frequent. As a result, the tutors' workload will be reduced. Having feedback from the mentors may reduce the pressure on the tutors in terms of the frequency of feedback.

CHAPTER TWELVE

CONCLUSIONS AND RECOMMENDATIONS

12.1 Introduction

This chapter is divided into three sections. The first section focuses on the conclusions (key contributions to knowledge) within the two overarching focus areas of the current study — the pedagogical value of e-portfolios and the contextual challenges that affect the role of e-portfolios in mediating the students' learning activities. The second section outlines the recommendations of the findings. The final section outlines the strengths and weaknesses of using Activity Theory as an analytical framework and the limitations of the study.

12.2 Summary of conclusions (key contributions)

12.2.1 Conclusions related to the pedagogical value of e-portfolios

Conclusion 1: e-portfolios provide opportunities for students to connect with their tutors on both the academic and personal level.

The current study provides a new insight that e-portfolios provide students with a platform through which they can connect with their tutors not only on the academic level but also on the personal level. The e-portfolio was no longer a mere a personal and private learning space, rather, it was also a social space for the students to connect and communicate with multiple audiences, including their tutors. Its private and confidential nature allowed the student to have control over the nature of information they could share with their tutors. This in turn provided them an opportunity to share both academic related work and personal information about themselves with

their tutors. This was done to allow their tutors to see them as a holistic being and also to deepen the relationship with them.

Conclusion 2: E-portfolios provide an opportunity for students to learn from and support each other as community of practice.

Students are social beings who need social connections to learn and grow. The findings revealed that the e-portfolio offered an interactive platform that allowed the students to create their own personal network of connections and engage in different learning communities, driven by their needs, interests and motivation. The social interaction features of the e-portfolio allowed the students to engage in dialogue and an iterative exchange of experiences, ideas, thoughts, and perspectives as well as giving and receiving feedback from one another within these communities. Through dialogues and exposure to the different perspectives and insights their peers may have brought to these communities, students had an opportunity to internalize and reach different interpretations of the same knowledge. The e-portfolio itself as a product could be used as tool for peer mentoring allowing senior students to share their experiences and achievements with the new students by publishing their e-portfolio, or part of it, with them. This culture of sharing and interaction has the potential to contribute to the evolution of students' profiles from being a mere information collector to an interactive knowledge creator.

Conclusion 3: E-portfolios can be a powerful tool for providing immediate and personalized feedback to students. However, their effectiveness can be impeded by the tutors' workload and their busy schedule.

The study has shown that students value and ask for feedback for different reasons. They consider it an essential element of

their learning and progress. They particularly value a timely, personalized and detailed feedback with a focus on how to improve their work. The ubiquitous nature of the e-portfolio provided the tutors the opportunity to respond quickly to the students' requests for feedback. This immediate feedback was particularly useful for the students who were struggling and needed assistance but were reluctant to ask for help. The e-portfolio allowed for more personal and private conversations between the tutor and student to talk about this issues. However, this usually difficult to achieve because of the heavy workload it entails for the tutors and the tutors' other commitments which seem to be a given a priority. Some tutors were able to overcome this problem through managing their time effectively. They set times in their schedule, for example, during breaks or while commuting on public transport, to access the students' e-portfolio on their mobile devices and view their work and provide feedback accordingly.

Conclusion 4: e-portfolios provide students opportunities to engage in reflective practice through promoting the practice of self-assessment.

Both the reflective component and the structure (all work in one place and hyperlinking and tagging functionality) of the e-portfolio facilitated self-assessment practices through encouraging the students to iteratively look backwards and forwards on their experiences and actions in order to form connections between their different learning experiences, develop self-awareness, and monitor their progress and development. This iterative process of reflection and making connections enables students to gain fresh insights from their experience, identify gaps in their learning and areas where they needs development, and integrate theory into practice. This in

turn has the potential to engage students in a process of continuous learning and self-improvement, which is considered to be a prerequisite for reflective practice.

Conclusion 5: e-portfolios with embedded reflection prompts/templates can enhance the students' capacity to reflect, especially in the early stages of learning how to reflect.

Several students, particularly those who were struggling with or new to reflection, highly valued the structured reflective templates embedded in the e-portfolio system. Having reflective templates within the e-portfolio system were seen useful for introducing, prompting and structuring the reflection process for both those who were new to reflection and those who wanted to enhance their reflective skills. Some improvement in the students' reflective writing was noted by the students and their tutors after using these templates for a year. Their reliance on these templates decreased over time as their capacity to reflect has improved and they needed a more unstructured approach to reflection.

Conclusion 6: The multimodal nature of e-portfolios allows for more than just a visually appealing presentation of learning, rather, it encourages students to develop a detailed representation of their learning reflecting the multifaceted nature of their experiences.

The process of combining different media together to reflect on or present their learning experience in a comprehensive way required the students to consciously engage in a process of collecting, analysing, synthesizing and integrating the information they gathered from different sources using different media during their academic and clinical experience. This process required them to fully engage with this multimedia

information to better understand and show the multifaceted nature of their experience.

12.2.2 Contextual challenges that affected the use or role of the e-portfolio

Conclusion 7: Imbalance between students' expectations for feedback and real capacity of tutors can negatively impact the students' motivation to use e-portfolios.

Some students expected that sharing their work through the e-portfolio would increase their opportunity to receive more frequent feedback. If they share a piece of work with their tutor in the e-portfolio, they require a response. But, this was seen to be beyond the tutors' capacity because of their workload and the large amount of work that some students shared with them. The students, as a result, started to question the value of the e-portfolio as a feedback tool and became less motivated to use it for sharing more work with their tutors.

Conclusion 8: There is a tendency of some tutors to use e-portfolios for summative rather than formative feedback because of their busy schedule and academic workload.

The findings has shown that some tutors were more likely to provide feedback only on work that was submitted for summative assessment in the e-portfolio due to their busy schedule and academic workload. Providing formative feedback on every single piece of work that was not going to be summatively assessed was considered less urgent and sometimes not necessary by some tutors. The fact that summative feedback was given a priority over formative feedback resulted in the e-portfolio to be used and seen as an

assessment tool rather than a learning tool. This led some students to feel frustrated because they could not see the value of the e-portfolio to enable them to receive adequate feedback from their tutors to improve their performance.

12.3 Recommendation and implication

The findings of the current study have several recommendations:

12.3.1 Recommendations for students

- The findings show that the tutors complained about the lack of selectivity shown by some students in terms of sharing everything with them in the e-portfolio to the extent that it felt overwhelming. Students need to be advised that sharing their work with others should be purposeful. They need to think before they share and ask themselves why they are sharing this particular piece of work and what do they want their tutor to do with it.

- The findings also revealed that some students were struggling with writing reflection. Students need to know that reflection is a learnable skill and it takes time. Training and workshops should be conducted to teach students how to reflect. Examples of critical and well written reflections should be given to give them an idea of what reflection entails. A variety of reflective frameworks should be introduced to students and help should be provided in selecting the appropriate framework that suit their purpose. It is important that the students are given the freedom to use reflective template or models and they need to understand that these templates and models are useful tools for encouraging and guiding their

reflective activity and they are not ends in themselves (Finlay, 2008; Johns, 2013). Students should be introduced to and encouraged to try out different models, with varying levels of complexity. The key to helping the students to select a framework that will help them to develop their reflective skills is that they should first understand the differences between these frameworks in terms of their focus, strengths, and limitations

- The findings suggest that students do not develop in isolation, rather, they learn from the experience of others through participating in online learning communities. As members in a learning community, students should know that they become contributors not just recipients of knowledge and this is an important part of their professional practice. In this regard, e-portfolios can be used to create and support these learning communities and incorporate collaborative learning activities such as providing and receiving peer feedback, and build a group webfolio to develop and present a particular project and show collaboration.

- Appropriate scaffolding, in the form of providing training and feedback, is required to encourage students to take advantage of the multimedia nature of the e-portfolio and try out different, non-textual modes of expression and presentation of their learning. Technical support should be given to help students to develop an understanding of how to use different types of media to record their reflection and present their learning and be able to choose the medium or the combination of media by which they can effectively and creatively express themselves and demonstrate their knowledge.

- The findings show that most students were motivated by the creative presentational functions of the e-portfolio to publishing their e-portfolio and share it with prospective students and employers. Students can benefit from guidance and support on how to publish their e-portfolios both inside and outside the academic environment and understanding the ethical and legal issues associated with that.

12.3.2 Recommendations for tutors

- The findings demonstrate that the tutors' workload and busy schedule interfered with their ability to look at what the students had shared with them and also impeded their ability to provide frequent and immediate feedback to them accordingly through the e-portfolio. This resulted in the students became frustrated and less motivated to use the e-portfolio. Two reasonable approaches can be applied to tackle this issue. The first approach is for tutors to set aside blocks of time in their schedule for viewing what their students had shared with them in the e-portfolio on a regular basis, monitoring their progress and providing them with feedback accordingly. Tutors should keep this time free from meetings or other commitments in the way they do for other teaching activities. Moreover, it would be more useful if tutors communicate these block of times to their students so that the students know when their e-portfolio will be looked at and feedback will be given. The second approach is to incorporate peer feedback in the course where students can provide feedback to one another through commenting on each other's work or performance. Peer feedback can be delivered in person, for example, in groups or pairs, or online, such as in their e-portfolio. This peer feedback should, overtime, reduce

the amount of time tutors need to spend on providing feedback to students.

- The findings suggest that the e-portfolio can be a rich source of information about students both academically and personally. It is very important, therefore, that tutors be able to use and integrate this knowledge into their tutoring activities to support students' learning and identify any obstacles or challenges they might be experiencing, for example, learning difficulties and mental health issues, and refer them accordingly to specialist services when needed.

- Guidance, support and training are required for tutors in order to help them grasp the functions and opportunities available through e-portfolios to help their students.

- The findings show that the lack of tutors' familiarity of the capability and different features of the e-portfolio system at stake, made them unable to see its potential to support students. A solution for this issue could be that encouraging tutors to develop their own e-portfolio using the same system. This way they will become more familiar with the system and see what is capable of.

12.3.3 Recommendations for programs and universities

- The findings show that few students shared sensitive information about their personal life and mental health issues with their tutors through the e-portfolio. Sharing such personal data has a legal implications that need to be considered by the university and the e-portfolio system provider. Appropriate compliance to data protection, privacy and confidentiality must be ensured. In compliance with

Data Protection Act 1998, both students and tutors should be advised to avoid establishing, holding or processing any personal data concerning other persons.

- The findings show that the students could not have access to their e-portfolio whilst on placement due to the lack or limited number of computers, that they were mainly used for patient care and/or administrative purposes by the clinical staff. At the same time, the students were not always allowed to use their mobile devices in many placement areas either because of staff attitude or technical issues. It would be useful if the university invest in some desktop computers and allocate them to different placement areas for the students to use and access their e-portfolio.

- The findings also demonstrate that the some students experienced some difficulties when they used the e-portfolio. As such, the programs leaders should not assume that students are 'digital natives'. Training, workshops and drop in sessions should be conducted and be part of the induction activities.

- The findings suggest that there should be clear written rules and policies on the provision, frequency, and timing of feedback and support that should be provided to students through the e-portfolio.

- The findings show that the students put effort and time in developing their placement Webfolio using multimedia. Creativity in developing e-portfolio should be rewarded by including it in the assessment criteria of the evaluation.

12.3.4 Implications on professionalism and hidden curriculum

As previously mentioned in chapter 2, reflective practice plays an important role in fostering the development of professionalism in healthcare professions. Therefore, the findings suggest that the e-portfolio, with its capacity to promote self-assessment and reflective practice, can be a useful tool to help students learn professionalism during their clinical training. The implication of this finding is that students should be first made aware and become familiar with the standards of professional and personal behaviour and attitudes they are expected to demonstrate from the very the beginning of their course. A list of these expected behaviours can be placed in their e-portfolio to which students can attach evidence of their development throughout their study. Becoming aware of what is expected will help them to recognize both appropriate and inappropriate behaviours when they reflect on what they have observed in the practitioners' behaviours. They will also become aware of the conflicting, often hidden, messages they may come across during their placement. E-portfolios can provide a safe opportunity for them to reflect on the different positive and negative role models they see on placement, track hidden curriculum, and assess their own progress on becoming a professionals using expected professional behaviours as criteria and devise action plan for improvement.

12.3.5 Recommendations for further research

The findings of the current study suggest further research on the following key areas:

- Since many students in the current study valued the e-portfolio for allowing immediate feedback, a qualitative research could usefully explore to what extent and in what

ways receiving immediate feedback is useful to students' learning compared to delayed feedback.

- An interesting question that deserves to be researched is what are the types of knowledge and skills gained by students through participating in online learning communities in the e-portfolio and to what extent students apply/use these knowledge and skills to further their own learning and reflection.

- Another research question that need be addressed is whether the use of multimedia for self-expression and presentation of learning lead to a deeper reflection. Another research can also investigate the tutors' perception and attitude towards the students' use of multimodal reflection.

- Further research is also desirable on the willingness of employers to receive e-portfolios from nursing graduates as a part of the recruitment process. Investigate whether e-portfolios are useful in differentiating between the candidates in the most effective and meaningful way, from the employers' perspective. Explore the issues that are affecting employers' acceptance and engagement with e-portfolio as a job seeking tool.

- Further research could be useful to explore whether sharing academic and non-academic work and information with tutors will enhance communication and deepen the relationship between students and their tutors.

- Another longitudinal study with larger sample is required to investigate in a great depth the contradictions emerged in the four learning activities (recording, sharing, reflection, and

evidencing) and the effect of these contradictions on the attainment of the outcomes of each activity over time.

- The current study can be repeated but with final year students across the three divisions of Nursing, Midwifery and Physiotherapy to investigate their uses and perceptions of e-portfolios given the fact that they are working toward graduation and preparing for their career.

12.4 Strengths and limitations of using Activity Theory

This study adds to the growing body of work through using Activity Theory as a research framework in the areas of educational technology in general and e-portfolios in particular. The study demonstrates that Activity Theory provided a useful methodological and analytical framework for understanding the pedagogical value of e-portfolios and the challenges that influenced its effective use. The structure of Activity Theory framework allowed for understanding and analysing the complex dynamics and structure of, and interactions within the context in which the e-portfolio was embedded. Analysing the context helped to uncover and understand the underlying mechanisms and structures that shaped the role and effectiveness of the e-portfolio as a mediating tool of the students' learning activities.

Moreover, the framework allowed for incorporating multiple perspectives about the mediational role of e-portfolio in each activity on both the individual level (students) and collective level (tutors and curriculum planners). Thus, it allowed for a holistic and rich understanding of the pedagogical value the e-portfolio for students. It also enabled for identifying the

contradictions that emerged within the activity systems and influenced the mediational role of the e-portfolio in the four learning activity identified in this study.

Furthermore, the Activity Theory framework offered a systematic approach to the data collection and analysis, and interpretation of findings. In addition, the seven components of the framework (subjects, tool, object, outcome, community, rules and division of labour) provided a clear boundary of the case under investigation.

However, the use of Activity Theory as a theoretical framework in this study was not without difficulties. One of the difficulties was assigning the pertinent codes and categories to the components of each of the four identified activity systems. It was a daunting task as some of the codes did not initially seem to fit any of the components of the activity system. However, as the data analysis continued it became easier to assign these codes to the appropriate component. Another difficulty was analysing the interaction and relationship between the components of each activity system. Sometimes it was challenging to articulate the relationship between the components as the complexity and volume of data was overwhelming. Lastly, presenting these relationships in writing in a nonlinear way was a difficult and time consuming task.

12.5 Limitations of the study

Although the current study is longitudinal, uses multiple data collection methods, involves different stakeholder, a number of limitations are recognized:

- The composition of sample (students, tutors, and curriculum planners) lacked diversity in relation to gender. The majority

of participants were females. This is potentially because females make the majority of the field of nursing. Construction meaning from their experience with e-portfolio could be shaped by their gender. Therefore, the conclusions from this study should be carefully applied to other male students who are not represented by the participants of the current study.

- Three students left the course five months after the initial interviews. This reduced the number of the students who participated in the follow up interviews. Consequently, it is acknowledged that the study reflects the findings from a slightly reduced number and cannot be generalized. However, this aim of this study was transferability rather than generalizability as discussed in section 5.3.7.3. It also hoped that the findings of this study will contribute to the growing literature on e-portfolios in nursing and other health sciences in particular as well as the general education literature.

- The analysis presented in the study is the researcher's own representation. Maintaining objectivity during the data analysis and interpretation of data was quite challenging because it was difficult to put aside the researcher's opinions and preconceptions of e-portfolios. To address this issue, the participants' data such excerpts and screen shots were presented to show the transparency in reporting participants' views to the reader. Moreover, reflexive account of the researcher's beliefs and preconceptions was kept throughout the research process.

- Observation data were limited for the activity of recording as the researcher could not have access to the students' personal space. The researcher only had access to the shared

space. It is worth noting that this observation was based on the reflections the students submitted to the workspace or attached as evidence of learning to the learning outcomes in the modular learning outcome document on the e-portfolio.

REFERENCES

Abrami, P. & Barrett, H. 2005. Directions for research and development on electronic portfolios. *Canadian Journal of Learning and Technology/La revue canadienne de l'apprentissage et de la technologie,* 31.

Achrazoglou, J., Anthony, R., Jun, M. K., Marshall, J. & Roe, G. 2002. A white paper on performance assessment in teacher education: The Iowa ePortfolio model.

Acosta, T. & Liu, Y. 2006. ePortfolios: Beyond assessment. *Handbook of research on ePortfolios***,** 15-23.

Adams, D. & Miller, B. K. 2001. Professionalism in nursing behaviors of nurse practitioners. *Journal of Professional Nursing,* 17**,** 203-210.

Ajandi, J., Preston, S. & Clarke, J. 2013 Portfolio-Based Teaching and Learning: The Portfolio as Critical Praxis with Social Work Students. *Critical Social Work,* 14.

Alidina, K. 2013. Professionalism in post-licensure nurses in developed countries. *Journal of Nursing Education and Practice,* 3**,** 128.

Al-Kadri, H. M., Al-Moamary, M. S., Al-Takroni, H., Roberts, C. & van der Vleuten, C. P. M. 2012. Self-assessment and students' study strategies in a community of clinical practice: A qualitative study. *Medical Education Online,* 17**,** 10.3402/meo.v17i0.11204.

Allen, D. K., Brown, A., Karanasios, S. & Norman, A. 2013. How should technology-mediated organizational change be explained? A comparison of the contributions of critical realism and activity theory. *Mis Quarterly,* 37**,** 835-854.

Alsop, A. 2013. *Continuing professional development in health and social care: Strategies for lifelong learning*, John Wiley & Sons.

Altahawi, F., Sisk, B., Poloskey, S., Hicks, C. & Dannefer, E. F. 2012. Student perspectives on assessment: Experience in a competency-based portfolio system. *Medical Teacher,* 34**,** 221-225.

Alterio, M. 2004. Collaborative journalling as a professional development tool. *Journal of Further and Higher Education,* 28**,** 321-332.

American Educational Research Association (AMERA) 2011. Code of ethics. *Educational Researcher,* 40**,** 145-156.

ANCC. 2014. Certification Through Portfolio Application Requirements. Available at: http://www.nursecredentialing.org/CertificationPortfolioRequirements [Accessed 12 Jan. 2017].

Anderson, T. 2008. Towards a theory of online learning. *Theory and practice of online learning.* Edmonton AB: Athabasca University.

Andre, K. & Heartfield, M. 2011. Nursing and Midwifery Portfolios: Evidence of Continuing Competence, Elsevier Australia.

Andre, K. & Heartfield, M. 2016. Portfolios for Health Professionals, Elsevier Health Sciences APAC.

Andre, K. 2010. E-Portfolios for the aspiring professional. *Collegian: Journal of the Royal College of Nursing Australia,* 17**,** 119-124.

Anney, V. N. 2014. Ensuring the quality of the findings of qualitative research: looking at Trustworthiness Criteria. *Journal of Emerging Trends in Educational Research and Policy Studies,* 5**,** 272-281.

Applefield, J. M., Huber, R. & Moallem, M. 2000. Constructivism in theory and practice: Toward a better understanding. *The High School Journal,* 84**,** 35-53.

Argyris, C. & Schön, D. A. 1974. *Theory in practice: increasing professional effectiveness*, Jossey-Bass Publishers.

Ash, P. B. & D'Auria, J. 2012. *School Systems That Learn: Improving Professional Practice, Overcoming Limitations, and Diffusing Innovation*, SAGE Publications.

Atkins, S. & Murphy, K. 1993. Reflection: a review of the literature. *Journal of advanced nursing,* 18**,** 1188-1192.

Austin, Z., Marini, A. & DesRoches, B. 2005. Use of a learning portfolio for continuous professional development: A study of pharmacists in Ontario (Canada). *Pharmacy Education,* 5.

Avraamidou, L. & Zembal-Saul, C. 2002. Making the case for the use of web-based portfolios in support of learning to teach. *The Journal of Interactive Online Learning,* 1**,** 52.

Awang, D. (2008). "PebblePAD: Big Splashes or Mini Ripples? Reflections on Electronic Portfolio Usage on a Blended Learning Course." 7th European Conference on E-Learning, Vol 1: 73-81.

Banta, T. W. 2003. *Portfolio assessment: uses, cases, scoring, and impact*, Jossey-Bass.

Barab, S. A., Evans, M. A. and Baek, E. O. 2004. "Activity theory as a lens for characterizing the participatory unit." Handbook of research on educational communications and technology 2: 199-213.

Barab, S., Barnett, M., Yamagata-Lynch, L., Squire, K. & Keating, T. 2002. Using activity the-ory to understand the contradictions characterizing a technology-rich introductory astronomycourse. *Mind, Culture, and Activity. BarabMind, Culture, and Activity*.

Barber, P. 1992. Developing the 'person'of the professional carer. *Nursing Practice and Health Care, 4th edn (HinchliffS., NormanS. & SchoberJ. eds), Edward Arnold, Sevenoaks***,** 334-373.

Barbour, R. S. 2001. Checklists for improving rigour in qualitative research: a case of the tail wagging the dog? *British medical journal,* 322**,** 1115.

Baris, M. F. & Tosun, N. 2011. E-portfolio in Lifelong Learning Applications. *Procedia - Social and Behavioral Sciences,* 28**,** 522-525.

Barker, J. 2009. *Evidence-Based Practice for Nurses*, SAGE Publications.

Barksby, J., Butcher, N. & Whysall, A. 2014. A new model of reflection for clinical practice. *Nursing times,* 111**,** 21-23.

Barrett, H. & Carney, J. 2005. Conflicting paradigms and competing purposes in electronic portfolio development. *TaskStream web site*.

Barrett, H. & Wilkerson, J. 2004. Conflicting paradigms in electronic portfolio approaches: Choosing an electronic portfolio strategy that matches your conceptual framework. Available at: http://electronicportfolios.com/systems/paradigms.html, [Accessed 20 Feb. 2017].

Barrett, H. 2008. Online Personal Learning Environments: Structuring Electronic Portfolios to Support Lifelong and Life Wide Learning. Technology and Teacher Education Annual*,* 19**,** 8.

Barrett, H. 2010. Balancing the two faces of ePortfolios. *Educação, Formação & Tecnologias-ISSN 1646-933X,* 3**,** 6-14.

Barrett, H. C. 2002. ICT support for electronic portfolios and alternative assessment. *Networking the Learner.* Springer.

Barrett, H. C. 2005. Researching electronic portfolios and learner engagement: The REFLECT initiative. *Journal of Adolescent & Adult Literacy,* 50**,** 436-449.

Barrett, H. C. 2005. Researching electronic portfolios and learner engagement: The REFLECT initiative. *Journal of Adolescent & Adult Literacy,* 50**,** 436-449.

Barrett, H. C. 2006. Using electronic portfolios for formative/classroom-based assessment. *Classroom Connect Connected Newsletter,* 13.

Basharina, O. K. 2007. An activity theory perspective on student-reported contradictions in international telecollaboration. *Language Learning & Technology,* 11**,** 82-103.

Bashook, P. G., Gelula, M. H., Joshi, M. & Sandlow, L. J. 2008. Impact of student reflective e-portfolio on medical student advisors. *Teaching and Learning in Medicine,* 20**,** 26-30.

Bass, R. & Eynon, B. 2009. The difference that inquiry makes: A collaborative case study of technology and learning, from the visible knowledge project. *Academic Commons*. Washington: Center for New Designs in Learning and Scholarship. Available at: https://blogs.commons.georgetown.edu/vkp/files/2009/03/bass-revised-2.pdf [accessed March, 2017].

Baxter, P. and S. Jack 2008. "Qualitative case study methodology: Study design and implementation for novice researchers." *The qualitative report*, 13(4): 544-559.

Bazeley, P. & Jackson, K. 2013. *Qualitative Data Analysis with NVivo*, SAGE Publications.

Bekas, S. 2013. Critical reflection: a sound foundation for learning and practice in psychiatry. *Advances in psychiatric treatment,* 19**,** 320-328.

Belcher, R., Jones, A., Smith, L.-J., Vincent, T., Naidu, S. B., Montgomery, J., Haq, I. & Gill, D. 2014. Qualitative study of the impact of an authentic electronic portfolio in undergraduate medical education. *BMC medical education,* 14**,** 265.

Belgrad, S. 2013. Portfolios and e-portfolios. Student reflection, self-assessment, and goal setting in the learning process. *Sage handbook of research on classroom assessment***,** 331-346.

Bell, L. 2015. Code of Ethics for Nurses With Interpretive Statements. *Critical Care Nurse,* 35**,** 84-84.

Bennett, S., Maton, K. & Kervin, L. 2008. The 'digital natives' debate: A critical review of the evidence. *British journal of educational technology,* 39**,** 775-786.

Bereiter, C. 1994. Constructivism, socioculturalism, and Popper's world 3. *Educational researcher,* 23**,** 21-23.

Berge, O. & Fjuk, A. 2006. Understanding the roles of online meetings in a net-based course. *Journal of Computer Assisted Learning,* 22**,** 13-23.

Berglund, M., Nilsson, C., Révay, P., Petersson, G. & Nilsson, G. 2007. Nurses' and nurse students' demands of functions and usability in a PDA. *International journal of medical informatics,* 76**,** 530-537.

Bhaskar, R. 1989. Reclaiming Reality: A Critical Introduction to Contemporary Philosophy, Verso.

Bhaskar, R. 1998. The Possibility of Naturalism: A Philosophical Critique of the Contemporary Human Sciences, Routledge.

Bhaskar, Roy 2012. 'Critical realism in resonance with Nordic ecophilosophy'. In Ecophilosophy in a World of Crisis: Critical Realism and the Nordic Contributions, eds R. Bhaskar, K. G. Høyer and P. Næss, 9–24. London: Routledge

Biggs, J. 1996. The teaching context: The assessment portfolio as a tool for learning. *Testing: To educate or to select***,** 227-271.

Biggs, J. B. 1987. *Student Approaches to Learning and Studying. Research Monograph*, ERIC.

Biggs, J. B. 2011. *Teaching for quality learning at university: What the student does*, McGraw-Hill Education (UK).

Birchenall, P. & Adams, N. 2011. *The Nursing Companion*, Palgrave Macmillan.

Birks, M., Hartin, P., Woods, C., Emmanuel, E. & Hitchins, M. 2016. Students' perceptions of the use of eportfolios in nursing and midwifery education. *Nurse education in practice,* 18**,** 46-51.

Black, P. & Wiliam, D. 1998. *Inside the black box: Raising standards through classroom assessment*, Granada Learning.

Black, P. & Wiliam, D. 2004. The formative purpose: Assessment must first promote learning. *Yearbook of the National Society for the Study of Education,* 103**,** 20-50.

Blaikie, N. 2007. Approaches to social enquiry: Advancing knowledge, Polity.

Bogdan, R. & Biklen, S. K. 2007. *Qualitative Research for Education: An Introduction to Theories and Methods*, Pearson/Allyn and Bacon.

Bogo, M. & Wayne, J. 2013. The Implicit Curriculum in Social Work Education: The Culture of Human Interchange. *Journal of Teaching in Social Work,* 33**,** 2-14.

Bogossian, F. E. & Kellett, S. E. M. 2010. Barriers to electronic portfolio access in the clinical setting. *Nurse Education Today,* 30**,** 768-772.

Bogossian, F. E., Kellett, S. E. M. & Mason, B. 2009. The use of tablet PCs to access an electronic portfolio in the clinical setting: A pilot study using undergraduate nursing students. *Nurse Education Today,* 29**,** 246-253.

Bolton, G. 2005. Reflective Practice: Writing and Professional Development, SAGE Publications.

Bonk, C. J. and Kim, K. A. 1998. Extending sociocultural theory to adult learning. In Smith, M.C. and Pourchot, T. Adult Learning and Development: Perspectives from Educational Psychology. Mahwah, NJ: Lawrence Erlbaum Associates, 1998

Boody, R. M. 2009. Career services perspectives on the use of portfolios in the teacher employment process: a survey. *Education,* 130**,** 67.

Borton, T. 1970. *Reach, touch, and teach: student concerns and process education*, McGraw-Hill.

Boud, D. & Dochy, F. 2010. Assessment 2020. Seven propositions for assessment reform in higher education. Sydney: Australian Learning and Teaching Council. Available at: https://www.uts.edu.au/sites/default/files/Assessment-2020_propositions_final.pdf [accessed 30 June. 2017)

Boud, D. 1993. Experience as the base for learning. *Higher education research and development,* 12**,** 33-44.

Boud, D., Keogh, R. & Walker, D. 1985. *Reflection: Turning Experience Into Learning*, Kogan Page.

Boulton, H. 2014. ePortfolios beyond pre-service teacher education: a new dawn? *European Journal of Teacher Education,* 37**,** 374-389.

Bowen, G. A. 2009. "Document analysis as a qualitative research method." Qualitative research journal 9(2): 27-40.

Bowen, G. A. 2009. Document analysis as a qualitative research method. *Qualitative research journal,* 9**,** 27-40.

Boyle, J. E. 1994. Portfolios: Purposes and possibilities. *Assessment Update,* 6**,** 10-11.

Branch Jr, W. T., Kern, D., Haidet, P., Weissmann, P., Gracey, C. F., Mitchell, G. & Inui, T. 2001. Teaching the human dimensions of care in clinical settings. *JaMa,* 286**,** 1067-1074.

Braun, V. and V. Clarke 2013. Successful Qualitative Research: A Practical Guide for Beginners, SAGE Publications.

Brenner, M. E. 2006. Interviewing in educational research. *Handbook of complementary methods in education research***,** 357-370.

Brereton, B. & Dunne, K. 2016. An analysis of the impact of formative peer assessment and screencast tutor feedback on veterinary nursing students' learning. *AISHE-J: The All Ireland Journal of Teaching and Learning in Higher Education,* 8.

Brinkman, S. & Kvale, S. 2015. Interviews: Learning the craft of qualitative research interviewing. *Aalborg. Accessed January,* 24**,** 2017.

British Educational Research Association (BERA) 2011. Ethical guidelines for educational research

Brooks, R., te Riele, K. & Maguire, M. 2014. *Ethics and Education Research*, SAGE Publications.

Brown, J. O. 2002. Know thyself: The impact of portfolio development on adult learning. *Adult Education Quarterly,* 52**,** 228-245.

Brown, J. O. 2010. Dwell in Possibility: PLAR and e-Portfolios in the Age of Information and Communication Technologies. *The International Review of Research in Open and Distributed Learning,* 12**,** 1-23.

Brown, K. L. 2003. From teacher-centered to learner-centered curriculum: Improving learning in diverse classrooms. *Education,* 124**,** 49.

Brown, R. A. 1995. Portfolio Development and Profiling for Nurses, Quay Books, Mark Allen Publishing Limited.

Bruner, J. S. 1966. *Toward a theory of instruction*, Harvard University Press.

Brunswick, N. 2012. *Supporting Dyslexic Adults in Higher Education and the Workplace*, Wiley.

Buckley, S., Coleman, J., Davison, I., Khan, K. S., Zamora, J., Malick, S., Morley, D., Pollard, D., Ashcroft, T., Popovic, C. & Sayers, J. 2009. The educational effects of portfolios on undergraduate student learning: A Best Evidence Medical Education (BEME) systematic review. BEME Guide No. 11. *Medical Teacher,* 31**,** 340-355.

Bullock, A. A. & Hawk, P. P. 2005. *Developing a teaching portfolio: A guide for preservice and practicing teachers*, Merrill Prentice Hall.

Bulman, C. & Schutz, S. 2013. *Reflective Practice in Nursing*, Wiley.

Burgess, D. & Newton, P. 2014. *Educational Administration and Leadership: Theoretical Foundations*, Taylor & Francis.

Burnard, P., Gill, P., Stewart, K., Treasure, E. & Chadwick, B. 2008. Analysing and presenting qualitative data. *British dental journal,* 204**,** 429-432.

Butler, P. 2006. A review of the literature on portfolios and electronic portfolios. *Techreport***,** 1-23.

Buzzetto-More, N. 2010. Assessing the efficacy and effectiveness of an e-portfolio used for summative assessment. *Interdisciplinary Journal of e-Learning and learning Objects,* 6**,** 61-85.

Buzzetto-More, N. 2010. Assessing the efficacy and effectiveness of an e-portfolio used for summative assessment. *Interdisciplinary Journal of e-Learning and learning Objects,* 6**,** 61-85.

Calandra, B., Brantley-Dias, L., Lee, J. K. & Fox, D. L. 2009. Using video editing to cultivate novice teachers' practice. *Journal of Research on Technology in Education,* 42**,** 73-94.

Cambridge, B. L. 2001. Electronic portfolios as knowledge builders. *In Electronic portfolios: Emerging practices in student, faculty, and institutional learning***,** 1-11.

Cambridge, B. L., Kahn, S., Tompkins, D. P. & Yancey, K. B. 2001. Electronic Portfolios: Emerging Practices in Student, Faculty, and Institutional Learning. Washington, D.C.: American Association for Higher Education, 1-11.

Cambridge, D. 2008. Audience, integrity, and the living document: eFolio Minnesota and lifelong and lifewide learning with ePortfolios. *Computers & Education,* 51**,** 1227-1246.

Cambridge, D. 2010. *Eportfolios for Lifelong Learning and Assessment*, Wiley.

Cambridge, D., Cambridge, B. L. & Yancey, K. B. 2009. *Electronic Portfolios 2.0: Emergent Research on Implementation and Impact*, Stylus.

Campbell, D. M. 2004. *How to Develop a Professional Portfolio: A Manual for Teachers*, Pearson.

Carlin-Menter, S. M. & Shuell, T. J. 2003. Teaching writing strategies through multimedia authorship. *Journal of Educational Multimedia and Hypermedia,* 12**,** 315-334.

Carraccio, C. & Englander, R. 2004. Analyses/literature reviews: evaluating competence using a portfolio: a literature review and web-based application to the ACGME competencies. *Teaching and learning in medicine,* 16**,** 381-387.

Casey, D. C. & Egan, D. 2010. The use of professional portfolios and profiles for career enhancement. *British journal of community nursing,* 15**,** 547-552.

Cayne, J. V. 1995. Portfolios: a developmental influence? *Journal of Advanced Nursing,* 21**,** 395-405.

Challis, D. 2005. Towards the mature ePortfolio: Some implications for higher education. *Canadian Journal of Learning and Technology/La revue canadienne de l'apprentissage et de la technologie,* 31.

Challis, M. 1999. AMEE Medical Education Guide No. 11 (revised): Portfolio-based learning and assessment in medical education. *Medical Teacher,* 21**,** 370-386.

Chambel, T. & Guimarães, N. 2005. Learning styles and multiple intelligences. *Encyclopedia of Distance Learning***,** 1237-1247.

Chang, C.-C. 2001. A study on the effectiveness analysis of web-based learning portfolio. *British journal of educational technology,* 32**,** 435-458.

Chang, C.-C. 2008. Enhancing self-perceived effects using Web-based portfolio assessment. *Computers in Human Behavior,* 24**,** 1753-1771.

Chang-Wells, G. L. M., & Wells, G. 1993. Dynamics of discourse: Literacy and the construction of knowledge. In E. A. Forman, N. Minick, & C. A. Stone (Eds.), Contexts for learning: Sociocultural dynamics in children's development (pp. 58-90). New York: Oxford University Press.

Chen, H. L., Cannon, D., Gabrio, J., Leifer, L., Toye, G. & Bailey, T. 2005. Using wikis and weblogs to support reflective learning in an introductory engineering design course. *Human Behaviour in Design,* 5**,** 95-105.

City & Guilds 2015. Techno-logic: using technology to improve efficiency: a survey of operational staff at training provider organisations. London.

Clandinin, D. J. & Cave, M. T. 2008. Creating pedagogical spaces for developing doctor professional identity. *Medical education,* 42**,** 765-770.

Clark, J. E. & Eynon, B. 2009. E-portfolios at 2.0-Surveying the Field. *Peer Review,* 11**,** 18.

Coates, H. 2007. A model of online and general campus-based student engagement. *Assessment & Evaluation in Higher Education,* 32**,** 121-141.

Coffey, A. 2005. The clinical learning portfolio: a practice development experience in gerontological nursing. *Journal of Clinical Nursing,* 14**,** 75-83.

Cohen, L., Manion, L. & Morrison, K. 2011. *Research methods in education,* London, Routledge.

Cohn, E. R. & Hibbitts, B. J. 2004. Beyond the electronic portfolio: A lifetime personal web space. *Educause Quarterly,* 27**,** 7-11.

Cole, M. and Y. Engeström 1993. "A cultural-historical approach to distributed cognition." Distributed cognitions: Psychological and educational considerations: 1-46.

Coleman, G. & O'Connor, R. 2007. Using grounded theory to understand software process improvement: A study of Irish software product companies. *Information and Software Technology,* 49**,** 654-667.

Comfort, P. & Abrahamson, E. 2010. *Sports Rehabilitation and Injury Prevention*, Wiley.

Corbin, J. & Strauss, A. 2008. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, SAGE Publications.

Cordier, R., McAuliffe, T., Wilson, N. J., Totino, R., Dender, A., Smith, C. & Stephens, M. 2015. The appropriateness and feasibility of an online e-Portfolio for assessment of undergraduate allied health students. *Australian occupational therapy journal*, 63(3),154-163.

Costa, A. L. & Kallick, B. 2003. *Assessment strategies for self-directed learning*, Corwin Press.

Coulehan, J. 2005. Viewpoint:: Today's Professionalism: Engaging the Mind but Not the Heart. *Academic Medicine,* 80**,** 892-898.

Crabtree, B. F. and W. L. Miller 1992. Doing qualitative research, Sage Publications.

Creswell, J. W. 2007. *Qualitative inquiry and research design: choosing among five approaches,* London, SAGE Publications.

Crist, P. & Scaffa, M. 2012. Best Practices in Occupational Therapy Education, Routledge.

Crowe, S., K. Cresswell, A. Robertson, G. Huby, A. Avery and A. Sheikh (2011). "The case study approach." *BMC medical research methodology*, 11(1),100.

Cruess, R. L. & Cruess, S. R. 2006. Teaching professionalism: general principles. *Medical teacher,* 28**,** 205-208.

Cruess, R. L. & Cruess, S. R. 2008. Expectations and obligations: professionalism and medicine's social contract with society. *Perspectives in Biology and Medicine,* 51**,** 579-598.

Cruess, S. R. & Cruess, R. L. 1997. Professionalism must be taught. *BMJ,* 315**,** 1674-1677.

Cruess, S. R. & Cruess, R. L. 2012. Teaching professionalism – Why, What and How. *Facts, Views & Vision in ObGyn,* 4**,** 259-265.

CSP. 2014. Keeping a CPD portfolio. Available at: http://www.csp.org.uk/professional-union/careers-development/cpd/keeping-portfolio [Accessed 12 Jan. 2017].

Currant, N., Murray, C., Higgison, C., Taylor, J., Pellow, A., Hennessy, S., Raby, S., Hairsine, J. & Sykes, R. 2006. Implementing e-Portfolios: Technical and Organisational Issues. Networked Learning. Conference Proceedings, 2006. Citeseer.

D'eon, M., Lear, N., Turner, M. & Jones, C. 2007. Perils of the hidden curriculum revisited. *Medical Teacher,* 29**,** 295-296.

Dahlstrom, E., Brooks, C., Grajek, S. & Reeves, J. 2015. ECAR Study of Students and Information Technology. Available at: https://er.educause.edu/~/media/files/library/2016/10/ers1605.pdf?la=en [Accessed 20 July.2017].

Danermark, B. 2007. Interdisciplinary Research and Critical Realism: The Example of Disability Research. *Journal of Critical Realism,* 5**,** 56-64.

Dannefer, E. F. & Prayson, R. A. 2013. Supporting students in self-regulation: Use of formative feedback and portfolios in a problem-based learning setting. *Medical teacher,* 35**,** 655-660.

Dannefer, E. F. 2013. Beyond assessment of learning toward assessment for learning: educating tomorrow's physicians. *Medical teacher,* 35**,** 560-563.

David, M. F. B., Davis, M., Harden, R., Howie, P., Ker, J. & Pippard, M. 2001. AMEE Medical Education Guide No. 24: Portfolios as a method of student assessment. *Medical teacher,* 23**,** 535-551.

Davies, S., Mullan, J. & Feldman, P. 2017. Rebooting learning for the digital age: What next for technology-enhanced higher education? *Higher Education Policy Institute, Report,* 93.

Davis, E. A. 2014. Scaffolding Learning. *In:* GUNSTONE, R. (ed.) *Encyclopedia of Science Education.* Dordrecht: Springer Netherlands.

Davis, M. H. & Ponnamperuma, G. G. 2005. Portfolio assessment. *Journal of Veterinary Medical Education,* 32**,** 279-284.

Davis, M., Ben-David, M. F., Harden, R., Howie, P., Ker, J., McGhee, C., Pippard, M. & Snadden, D. 2001. Portfolio assessment in medical students' final examinations. *Medical Teacher,* 23**,** 357-366.

De Castro Friedrich, D. B., Gonçalves, A. M. C., de Sá, T. S., Sanglard, L. R., Duque, D. R. & de Oliveira, G. M. A. 2010. The Portfolio as an Evaluation Tool: an Analysis of its Use in an Undergraduate Nursing Program. *Rev. Latino-Am. Enfermagem,* 18**,** 1123-30.

De Villiers, R. & van der Merwe, M. D. 2011. The Partial Approach to Grounded Theory Integrated with Activity Theory: A Generic Framework. Alternation Special Edition 4, 365–402.

Deane, R. P., Joyce, P. & Murphy, D. J. 2015. Team Objective Structured Bedside Assessment (TOSBA) as formative assessment in undergraduate Obstetrics and Gynaecology: a cohort study. *BMC Medical Education,* 15**,** 172.

Dearing, R. 1997. The Dearing Report. *The National Committee of Enquiry into Higher Education*.

Dearman, S. P., Joiner, A. B., Abbott, S. & Longson, D. 2014. Passing the ARCP: Successful Portfolio-Based Learning. RCP Publication, London.

Dema, O. & Moeller, A. K. 2012. Teaching culture in the 21st century language classroom.Faculty Publications: Department of Teaching , Learning and Teacher Education. 181.

Denzin, N. K. 1978. *Sociological methods: a sourcebook*, McGraw-Hill.

Denzin, N. K. and Y. S. Lincoln 2003. Collecting and Interpreting Qualitative Materials, SAGE Publications.

Department for Education and Skills 2005. Harnessing Technology: Transforming Learning and Children's Services. *Retrieved,* 11**,** 2010.

Dewey, J. 1933. *How We Think*, D.C. Heath & Company.

DiCicco-Bloom, B. & Crabtree, B. F. 2006. The qualitative research interview. *Medical education,* 40**,** 314-321.

Dinham, S. & Scott, C. 2003. Benefits to teachers of the professional learning portfolio: a case study. *Teacher Development,* 7**,** 229-244.

Dolan, G., Fairbairn, G. & Harris, S. 2004. Is our student portfolio valued? *Nurse Education Today,* 24**,** 4-13.

Driessen, E. W., Muijtjens, A. M. M., Van Tartwijk, J. & Van Der Vleuten, C. P. M. 2007. Web-or paper-based portfolios: is there a difference? *Medical education,* 41**,** 1067-1073.

Driessen, E. W., Muijtjens, A. M., Van Tartwijk, J. & Van Der Vleuten, C. P. 2007. Web-or paper-based portfolios: is there a difference? *Medical Education,* 41**,** 1067-1073.

Driessen, E. W., Overeem, K., Van Tartwijk, J., Van Der Vleuten, C. P. & Muijtjens, A. M. 2006. Validity of portfolio assessment: which qualities determine ratings? *Medical education,* 40**,** 862-866.

Driessen, E. W., Van Tartwijk, J., Overeem, K., Vermunt, J. D. & Van Der Vleuten, C. P. 2005. Conditions for successful reflective use of

portfolios in undergraduate medical education. *Medical education,* 39**,** 1230-1235.

Driessen, E., Van Tartwijk, J., Van Der Vleuten, C. & Wass, V. 2007. Portfolios in medical education: why do they meet with mixed success? A systematic review. *Medical education,* 41**,** 1224-1233.

Duffy, K., Vickers, F. & Anthony, D. M. 2010. Are electronic portfolios an asset to learning and placement? *Learning and teaching in higher education,* 4.

Duffy, T. M. & Jonassen, D. H. 2013. *Constructivism and the technology of instruction: A conversation*, Routledge.

Duncan-Pitt, L. & Sutherland, S. 2006. An introduction to the use of eportfolios in professional practice. *Journal of Radiotherapy in Practice,* 5**,** 69-75.

Duque, G., Finkelstein, A., Roberts, A., Tabatabai, D., Gold, S. & Winer, L. 2006. Learning while evaluating: the use of an electronic evaluation portfolio in a geriatric medicine clerkship. *BMC medical education,* 6**,** 4.

Easton, G. 2010. Critical realism in case study research. *Industrial Marketing Management,* 39**,** 118-128.

ECORYS (Firm) 2016. Digital skills for the UK economy. UK.

Eisenhardt, K. & Santos, F. 2002. Knowledge-based View: A new theory of strategy? Handbook of strategy and management. London: Sage.

Eisenhardt, K. M. & Graebner, M. E. 2007. Theory building from cases: opportunities and challenges. *Academy of management journal,* 50**,** 25-32.

Endacott, R., Gray, M. A., Jasper, M. A., McMullan, M., Miller, C., Scholes, J. & Webb, C. 2004. Using portfolios in the assessment of learning and competence: the impact of four models. *Nurse education in practice,* 4**,** 250-257.

Engeström, Y. 1987. Learning by expanding. An activity-theoretical approach to developmental research. Helsinki: Orienta-Konsultit.

Engeström, Y. 1993. "Developmental studies of work as a testbench of activity theory: The case of primary care medical practice." In:

Understanding practice: Perspectives on activity and context. Cambridge: Cambridge University Press.

Engestrom, Y. 1999. Innovative learning in work teams: Analyzing cycles of knowledge creation in practice. Perspectives on activity theory. Cambridge, CUP.

Engeström, Y. 2001. "Expansive learning at work: Toward an activity theoretical reconceptualization." Journal of education and work 14(1): 133-156.

Engeström, Y., R. Miettinen and R. L. Punamaki 1999. Perspectives on activity theory, Cambridge Univ Pr.

Entwistle, N. 1997. Contrasting perspectives on learning. *In:* Marton, F., Hounsell, D. J. & Entwistle, N. J. (eds.) *The Experience of Learning: Implications for Teaching and Studying in Higher Education.* Edinburgh: Scottish Academic Press.

Entwistle, N. J. 1998. Approaches to learning and forms of understanding. *Teaching and learning in higher education***,** 72-101.

European Institute for E-Learning (EIfEL). 2008. Memorandum of understanding: ePortfolio for all. Available at: http://www.eife-l.org/activities/campaigns/epmou [Accessed December. 2015]

Ezzy, D. 2002. Qualitative Analysis: Practice and Innovation, Routledge.

Fåhræus, E. R. 2004. Distance education students moving towards collaborative learning-A field study of Australian distance education students and systems. *Journal of Educational Technology & Society,* 7**,** 129-140.

Fawns, T. & McKenzie, K. 2009. How to ensure e-portfolios are a valuable resource to students' learning. *Nursing times,* 106**,** 21-23.

Ferns, S. & Comfort, J. 2014. Eportfolios as Evidence of Standards and Outcomes in Work-Integrated Learning. *Asia-Pacific Journal of Cooperative Education,* 15**,** 269-280.

Fernsten, L. & Fernsten, J. 2005. Portfolio assessment and reflection: enhancing learning through effective practice. *Reflective Practice,* 6**,** 303-309.

Finlay, L. 2008. Reflecting on 'Reflective practice'. PBPL paper 52; A discussion paper prepared for PBPL CETL. Available at:

http://www.open.ac.uk/opencetl/resources/pbpl-resources/finlay-l-2008-reflecting-reflective-practice-pbpl-paper-52 [Accessed November. 2015]

Flexner, A. 2002. Medical education in the United States and Canada. *Bulletin of the World Health Organization,* 80**,** 594-602.

Flick, U. 2006. Constant comparison method. The SAGE Dictionary of Social Research Methods. SAGE Publications, Ltd. London, England, SAGE Publications, Ltd.

Flick, U. 2008. *Designing Qualitative Research*, SAGE Publications.
Flottorp, S. A., Jamtvedt, G., Gibis, B. & McKee, M. 2010. Using audit and feedback to health professionals to improve the quality and safety of health care, WHO. regional office for Europe.

Fook, J., White, S. & Gardner, F. 2006. Critical reflection: a review of contemporary literature and understandings. *Critical reflection in health and social care***,** 3-20.

Forrest, M. E. S. 2008. On becoming a critically reflective practitioner. *Health Information & Libraries Journal,* 25**,** 229-232.

Frith, L. 2010. How do different models of PDP influence the embedding of e-Portfolios? *Journal of Learning Development in Higher Education,* Special Edition: 'Researching and Evaluating Personal Development Planning and e-Portfolio Practice'. http://www.aldinhe.ac.uk/ojs/index.php?journal=jldhe&page=article&op=view&path[]=111.

Fung, M. F. K., Walker, M., Fung, K. F. K., Temple, L., Lajoie, F., Bellemare, G. & Bryson, S. C. P. 2000. An Internet-based learning portfolio in resident education: the KOALA™ multicentre programme. *Medical Education,* 34**,** 474-479.

Gablinkske, P. B. 2014. A case study of student and teacher relationships and the effect on student learning. Available at: http://digitalcommons.uri.edu/cgi/viewcontent.cgi?article=1284&context=oa_diss [accessed 15 March. 2017]

Gaiser, R. R. 2009. The teaching of professionalism during residency: why it is failing and a suggestion to improve its success. *Anesthesia & Analgesia,* 108**,** 948-954.

Galatis, H., Leeson, J., Mason, J., Miller, A., O'Neill, O. & Framework, A. 2009. The VET E-portfolio roadmap: A strategic roadmap for e-

portfolios to support lifelong learning. *Canberra: Australian Flexible Learning Framework and Department of Education Employment and Workplace Relations*.

Gallagher, L. 2007. Continuing education in nursing: a concept analysis. *Nurse education today,* 27**,** 466-473.

Gallagher, P. 2001. An evaluation of a standards based portfolio. *Nurse Education Today,* 21**,** 409-416.

Gannon, F. T., Draper, P. R., Watson, R., Proctor, S. & Norman, I. J. 2001. Putting portfolios in their place. *Nurse Education Today,* 21**,** 534-540.

Gans, R. O. 2009. Mentoring with a formative portfolio: A case for reflection as a separate competency role. *Medical teacher,* 31**,** 883-884.

Garcia, A. C., Standlee, A. I., Bechkoff, J. & Yan, C. 2009. Ethnographic Approaches to the Internet and Computer-Mediated Communication. 38**,** 52-84.

Garis, J. W. 2007. e-Portfolios: Concepts, designs, and integration within student affairs. *New Directions for Student Services,* 2007**,** 3-16.

Garrett, B. M. & Jackson, C. 2006. A mobile clinical e-portfolio for nursing and medical students, using wireless personal digital assistants (PDAs). *Nurse Education Today,* 26**,** 647-654.

Garrett, B. M., MacPhee, M. & Jackson, C. 2013. Evaluation of an eportfolio for the assessment of clinical competence in a baccalaureate nursing program. *Nurse Education Today,* 33**,** 1207-1213.

Gaufberg, E. H., Batalden, M., Sands, R. & Bell, S. K. 2010. The hidden curriculum: what can we learn from third-year medical student narrative reflections? *Academic Medicine,* 85**,** 1709-1716.

Gay, L. R. & Airasian, P. W. 2000. *Educational Research: Competencies for Analysis and Application*, Merrill.

GDC. 2009. Developing revalidation: your chance to get involved. Available at: http://www.gdc-uk.org/Aboutus/Thecouncil/Meetings%202009/Item%206PaperE_an

nex%20c%20Revalidation%20development.pdf [Accessed 12 Jan. 2017].

Gerbic, P., Lewis, L. & Amin, N. M. 2011. Student perspectives of eportfolios: Change over four semesters. *Changing demands, changing directions. Proceedings Ascilite Hobart***,** 423-436.

Gibbs, G. 1988. *Learning by Doing: A Guide to Teaching and Learning Methods*, FEU.

Gill, P., Stewart, K., Treasure, E. & Chadwick, B. 2008. Methods of data collection in qualitative research: interviews and focus groups. *British dental journal,* 204**,** 291-295.

Giri, K., Frankel, N., Tulenko, K., Puckett, A., Bailey, R. & Ross, H. 2012. Keeping up to date: Continuing professional development for health workers in developing Countries. *Intra Health International*.

Gitonga, L. K. & Muriuki, N. S. 2014. Evaluation of Midwives' and Nurses' Continuing Professional Development in Reducing Maternal and Neonatal Mortality in Embu County, Kenya. *Open Journal of Obstetrics and Gynecology,* 2014.

Given, L. M. 2008. *The SAGE Encyclopedia of Qualitative Research Methods*, SAGE Publications.

Glaser, B. G. 1965. "The constant comparative method of qualitative analysis." Social problems: 436-445.

Glaser, B. G. and A. L. Strauss 1967. The Discovery of Grounded Theory: Strategies for Qualitative Research, Aldine.

Glaser, B. G. and A. L. Strauss 2009. The Discovery of Grounded Theory: Strategies for Qualitative Research, Aldine Transaction.

Glesne, C. 1999. *Becoming Qualitative Researchers: An Introduction*, Longman.

GMC 2004. GMC Factsheet on Revalidation. London: General Medical Council.

GMC. 2012. Supporting information for appraisal and revalidation. Available at: http://www.gmcuk.org/RT Supporting information for appraisal and revalidation DC5485.pdf 55024594.pdf [Accessed 12 Jan. 2017].

Goldsmith, D. J. 2007. Enhancing learning and assessment through e-portfolios: A collaborative effort in Connecticut. *New Directions for Student Services,* 2007**,** 31-42.

Gómez, S. S., Ostos, E. M. C., Solano, J. M. M. & Salado, T. F. H. 2013. An electronic portfolio for quantitative assessment of surgical skills in undergraduate medical education. *BMC medical education,* 13**,** 65.

González, J. Á. 2009. Promoting student autonomy through the use of the European Language Portfolio. *ELT journal,* 63**,** 373-382.

Goode, S. J. 2011. *So You Think You Can Teach: A Guide for New College Professors on How to Teach Adult Learners*, iUniverse.

Goodyear, H., Bindal, T. & Wall, D. 2013. How useful are structured electronic Portfolio templates to encourage reflective practice? *Medical teacher,* 35**,** 71-73.

Gordon, J. 2003. Assessing students' personal and professional development using portfolios and interviews. *Medical education,* 37**,** 335-340.

Gracey, C. F., Haidet, P., Branch, W. T., Weissmann, P., Kern, D. E., Mitchell, G., Frankel, R. & Inui, T. 2005. Precepting humanism: strategies for fostering the human dimensions of care in ambulatory settings. *Academic Medicine,* 80**,** 21-28.

Granberg, C. 2010. E-portfolios in teacher education 2002–2009: the social construction of discourse, design and dissemination. *European Journal of Teacher Education,* 33**,** 309-322.

Grant, A. J., Vermunt, J. D., Kinnersley, P. & Houston, H. 2007. Exploring students' perceptions on the use of significant event analysis, as part of a portfolio assessment process in general practice, as a tool for learning how to use reflection in learning. *BMC Medical Education,* 7**,** 1.

Gray, K., Thompson, C., Sheard, J., Clerehan, R. & Hamilton, M. 2010. Students as Web 2.0 authors: Implications for assessment design and conduct. *Australasian Journal of Educational Technology,* 26.

Gray, L. 2008. Effective Practice with e-Portfolios. Supporting 21st century learning. *JISC Innovation Group*.

Great Britain: Law Commission 2012. *Regulation of health care professionals: regulation of social care professionals in England, a joint consultation paper*, Stationery Office.

Green, J., Wyllie, A. & Jackson, D. 2014. Electronic portfolios in nursing education: A review of the literature. *Nurse Education in Practice,* 14**,** 4-8.

Green, J., Wyllie, A. & Jackson, D. 2014. Electronic portfolios in nursing education: A review of the literature. *Nurse Education in Practice,* 14**,** 4-8.

Greenhalgh, T. & Hurwitz, B. 1999. Why study narrative? *Bmj,* 318**,** 48-50.

Greenhow, C. and B. Belbas (2007). "Using activity-oriented design methods to study collaborative knowledge-building in e-learning courses within higher education." *International Journal of Computer-Supported Collaborative Learning* 2(4): 363-391.

Groom, B. & Maunonen-Eskelinen, I. 2006. The use of portfolios to develop reflective practice in teacher training: a comparative and collaborative approach between two teacher training providers in the UK and Finland. *Teaching in Higher Education,* 11**,** 291-300.

GTCs. 2013. *PRD Factsheet –Developing and Maintaining a CPD Portfolio*. Available at: http://www.gtcs.org.uk/web/FILES/professional-development/guina-cpd-portfolio.pdf [Accessed 12 Jan. 2017].

Guba, E. G. 1990. *The paradigm dialog*, Sage Publications.

Guder, C. 2013. The ePortfolio: a tool for professional development, engagement, and lifelong learning. *Public Services Quarterly,* 9**,** 238-245.

Hafferty, F. W. & Franks, R. 1994. The hidden curriculum, ethics teaching, and the structure of medical education. *Academic Medicine,* 69**,** 861-71.

Hafferty, F. W. & Levinson, D. 2008. Moving beyond nostalgia and motives: Towards a complexity science view of medical professionalism. *Perspectives in Biology and Medicine,* 51**,** 599-615.

Hagstrom, F. 2006. Formative learning and assessment. Communication Disorders Quarterly, 28, 24-36.

Hains-Wesson, R., Wakeling, L. & Aldred, P. 2014. A university-wide ePortfolio initiative at Federation University Australia: Software analysis, test-to-production, and evaluation phases. International Journal of ePortfolios, 4, 143-156.

Haldane, T. 2014. "Portfolios" as a method of assessment in medical education. Gastroenterology and Hepatology From Bed to Bench, 7, 89-93.

Hall, A. 2007. Vygotsky goes online: Learning design from a socio-cultural perspective. Learning and socio-cultural Theory: Exploring modern Vygotskian perspectives international workshop, 1(1), 6. Available at: http://ro.uow.edu.au/llrg/vol1/iss1/6 [acessed 20 May. 2017].

Hallam, G. C., Creagh, T. A., Harper, W. E. & Hauville, K. L. 2010. The development of strategies to drive government and academic policy to underpin e-portfolio practice. The eportfolio paradigm: informing, educating, assessing and managing with e-portfolios, Informing Science Press, Santa Rosa, CA, 289-319.

Hallam, G., Harper, W., McGowan, C., Hauville, K., McAllister, L. & Creagh, T. 2008. Australian ePortfolio Project: ePortfolio use by university students in Australia. Australian Learning & Teaching Council: Strawberry Hills, NSW available at: www. eportfoliopractice. qut. edu. au/information/report/index. jsp (accessed June 2, 2010).

Hannafin, M. J. & Land, S. M. 1997. The foundations and assumptions of technology-enhanced student-centered learning environments. Instructional science, 25, 167-202.

Harden, R. M. & Laidlaw, J. M. 2016. Essential Skills for a Medical Teacher: An Introduction to Teaching and Learning in Medicine, Elsevier Health Sciences UK.

Hardman, J. 2005. "An exploratory case study of computer use in a primary school mathematics classroom: New technology, new pedagogy." Perspectives in Education 23(4): 99-111.

Harling, K. 2002. An overview of case study. Paper presented at the American Agricultural Economics Association annual meeting, Long Beach, California. Available at:

http://www.farmfoundation.org/projects/documents/1_harling.pdf [accesed 23 May. 2017].

Harper, E. R., Rodden, T., Rogers, Y., Sellen, A. & Human, B. 2008. Human-Computer Interaction in the year 2020.

Harris, J., Whittaker, R. & Cameron, R. 2012. Recognising workplace learning: the emerging practices of e-RPL and e-PR. *Journal of Workplace Learning,* 24**,** 85-104.

Harris, S., Dolan, G. & Fairbairn, G. 2001. Reflecting on the use of student portfolios. *Nurse Education Today,* 21**,** 278-286.

Hawker, S., Payne, S., Kerr, C., Hardey, M. & Powell, J. 2002. Appraising the evidence: reviewing disparate data systematically. *Qualitative health research,* 12**,** 1284-1299.

Hegerholm, H. 2011. Digital portfolio as tool in distributed education. The Online Journal of New Horizons in Education, 1(4):26-34.

Heritage, M. 2011. Formative assessment: An enabler of learning. *Better: Evidence-based education*.

Herman, C. & Kirkup, G. 2008. Learners in transition: the use of ePortfolios for women returners to science, engineering and technology. *Innovations in Education and Teaching International,* 45**,** 67-76.

Higgins, R., Hartley, P. & Skelton, A. 2002. The conscientious consumer: Reconsidering the role of assessment feedback in student learning. *Studies in higher education,* 27**,** 53-64.

Hill-Sakurai, L. E., Lee, C. A., Schickedanz, A., Maa, J. & Lai, C. J. 2008. A professional development course for the clinical clerkships: developing a student-centered curriculum. *Journal of general internal medicine,* 23**,** 964-968.

Hine, C. 2005. Virtual methods and the sociology of cyber-social-scientific knowledge. *In Virtual methods: Issues in social research on the internet.* New York: Berg.

Hirumi, A. 2002. Student-Centered, Technology-Rich Learning Environments (SCenTRLE): Operationalizing Constructivist Approaches to Teaching and Learning. *Journal of Technology and Teacher Education,* 10**,** 497-537.

Holland, L. & Purnell, E. 2012. Does the use of multimedia technology change or improve first year Information System students' level of reflection? *Reflective Practice,* 13**,** 281-294.

Holloway, I. & Wheeler, S. 2013. *Qualitative Research in Nursing and Healthcare*, Wiley.

Honey, M., Doherty, I., Marshall, D. & McIlwain, K. E-portfolio Use in an Undergraduate Nursing Course: Descending into the Trough of Disillusionment. World Conference on Educational Multimedia, Hypermedia and Telecommunications, 2010. 1713-1718.

Honey, P. & Mumford, A. 2000. *The learning styles helper's guide*, Peter Honey Maidenhead, Berkshire.

Horlick, M., Masterton, D. & Kalet, A. 2009. Learning skills of professionalism: a student-led professionalism curriculum. *Medical Education Online,* 11.

House of Lords: Select Committee on Digital skills 2015. Make or Break: The UK's Digital Future. UK: UK Parliament.

HPC 2004. Standards of Proficiency: Occupational Therapist. London: Health Professions Council.

Hrisos, S., Illing, J. C. & Burford, B. C. 2008. Portfolio learning for foundation doctors: early feedback on its use in the clinical workplace. *Medical Education,* 42**,** 214-223.

Hsieh, P.-H., Lee, C.-I. & Chen, W.-F. 2015. Students' perspectives on e-portfolio development and implementation: A case study in Taiwanese higher education. *Australasian Journal of Educational Technology,* 31.

Huang, H. M. 2002. Toward constructivism for adult learners in online learning environments. *British Journal of Educational Technology,* 33**,** 27-37.

Huang, Y.-P. 2012. 21st Century Teaching and Learning through E-Portfolios: Potentials and Challenges in Teacher Education. *In:* Darren, C. (ed.) *E-Portfolios and Global Diffusion: Solutions for Collaborative Education.* Hershey, PA, USA: IGI Global.

Huddle, T. S. 2005. Viewpoint:: Teaching Professionalism: Is Medical Morality a Competency? *Academic Medicine,* 80**,** 885-891.

Hughes, R. G. 2008. Nurses at the "Sharp End" of patient care. In: Hughes RG, editor. 2008. Patient Safety and Quality: An Evidence-Based Handbook for Nurses. Rockville (MD): Agency for Healthcare Research and Quality (US); 2008 Apr. Chapter 2. Available at: https://www.ncbi.nlm.nih.gov/books/NBK2672/ [Accessed 15 June. 2017].

Hull, C. & Redfern, E. 2002. *Profiles and portfolios: a guide for nurses and midwives*, Palgrave Macmillan.

Hung, S.-T. A. 2012. A washback study on e-portfolio assessment in an English as a Foreign Language teacher preparation program. *Computer Assisted Language Learning,* 25**,** 21-36.

Hunter, C. 2012. The introduction of an ePortfolio Tool. DeHub: PLACE. *In:* BHASKAR, R., NAESS, P. & HØYER, K. G. (eds.) *Ecophilosophy in a World of Crisis: Critical Realism and the Nordic Contributions.* Taylor & Francis.

Inter/National Coalition For Electronic Portfolio Research 2003. Inter/National Coalition For Electronic Portfolio Research.

Jacko, J. A. 2012. *Human Computer Interaction Handbook: Fundamentals, Evolving Technologies, and Emerging Applications, Third Edition*, CRC Press.

Jakobsen, T. G. 2011. Nordic Ecophilosophy and Critical Realism. In: Bhaskar, R., Naess, P., & Høyer, K.G. eds., 2011. Ecophilosophy in a world of crisis: critical realism and the Nordic contributions. Routledge.

Jasper, M. 1995. The portfolioworkbook as a strategy for student-centred learning. *Nurse Education Today,* 15**,** 446-451.

Jasper, M. 2003. *Beginning Reflective Practice.* Nelson Thornes.

Jasper, M., Rosser, M. & Mooney, G. 2013. *Professional Development, Reflection and Decision-Making in Nursing and Healthcare*, Wiley.

Jenkins, H., Purushotma, R., Weigel, M., Clinton, K. & Robison, A. J. 2009. *Confronting the challenges of participatory culture: Media education for the 21st century*, Mit Press.

Jewkes, Y. 2012. *Dot.cons*, Taylor & Francis.

Jiang, Y. 2013. *Reflection, Change, and Reconstruction in the Context of Educational Reform and Innovation in China: Towards an Integrated Framework Centred on Reflective Teaching Practice for EFL Teachers' Professional Development*, Cambridge Scholars Publisher.

JISC 2006. e-Portfolios: What institutions really need to know. London: JiSC.

JISC 2008a. *Effective Practice with e-Portfolios: Supporting 21st century learning*, JISC.

JISC 2011. Emerging practice in a digital age. Bristol: JISC. http://www.jisc.ac.uk/media/documents/programmes/elearning/digiemerge/Emergingpracticeaccessible.pdf.

JISC 2012. JISC Developing Digital Literacies programme: Summary of project baseline reports

JISC. 2007. *e-Portfolios: An overview of JISC activities* [Online]. Available at: JISC http://www. jisc. ac. uk/media/documents/publications/eportfoliooverview2006. pdf [Accessed 16 December. 2016].

JISC. 2008b. *E-portfolios: Guidance and examples of organisational experience on choosing, implementing and using e-portfolios, supplemented by a range of case studies and multimedia resources.* [Online]. [Accessed 2016].

Johannesen, M. & Habib, L. Online MCQ-formative or summative assessment? Experiences from a higher educational environment. Society for Information Technology & Teacher Education International Conference, 2010. Association for the Advancement of Computing in Education (AACE), 2260-2266.

Johl, S. K. & Renganathan, S. 2010. Strategies for gaining access in doing fieldwork: Reflection of two researchers. *The Electronic Journal of Business Research Methods,* 8 (1)**,** 42-50.

Johns, C. 2013. *Becoming a Reflective Practitioner*, Wiley.

Johnson, R. B. & Christensen, L. 2016. *Educational Research: Quantitative, Qualitative, and Mixed Approaches*, SAGE Publications.

John-Steiner, V. and H. Mahn. 1996. "Sociocultural approaches to learning and development: A Vygotskian framework." Educational psychologist 31(3-4): 191-206.

Joinson, A. 2007. Oxford Handbook of Internet Psychology, OUP Oxford.

Jonassen, D. H. 1991. Objectivism versus constructivism: Do we need a new philosophical paradigm? *Educational technology research and development,* 39**,** 5-14.

Jonassen, D. H. 2000. Revisiting activity theory as a framework for designing student-centered learning environments. Theoretical foundations of learning environments: 89-121.

Jonassen, D. H. 2002. "Learning as Activity." Educational Technology 42(2): 45-51.

Jonassen, D. H. and L. Rohrer-Murphy. 1999. "Activity theory as a framework for designing constructivist learning environments." Educational Technology Research and Development 47(1): 61-79.

Jonassen, D., Davidson, M., Collins, M., Campbell, J. & Haag, B. B. 1995. Constructivism and computer-mediated communication in distance education. *American journal of distance education,* 9**,** 7-26.

Jones, M., K. Sackett, E. S and B. B 2006. ePortfolios in Nursing Education: Not Your Mother's Resume. In Annual Review of Nursing Education, Volume 5, 2007: Challenges and New Directions in Nursing Education. M. Oermann and K. Heinrich, Springer Publishing Company.

Joyce, P. 2005. A framework for portfolio development in postgraduate nursing practice. *Journal of Clinical Nursing,* 14**,** 456-463.

Joyes, G., Coolin, K. & Wayte, J. 2013. Open practice in support of wide-scale institutional e-Portfolio adoption. University of Nottingham.

Joyes, G., Gray, L. & Hartnell-Young, E. 2010. Effective practice with e-portfolios: How can the UK experience inform implementation. *Australasian Journal of Educational Technology,* 26**,** 15-27.

Kadagad, P. & Kotrashetti, S. M. 2013. Portfolio: A Comprehensive Method of Assessment for Postgraduates in Oral and Maxillofacial Surgery. *Journal of Maxillofacial & Oral Surgery,* 12**,** 80-84.

Kalathingal, S. & Buchanan, A. 2017. Tool and technology to promot student centered learning and assessment. *Oral Surgery, Oral Medicine, Oral Pathology and Oral Radiology,* 124**,** e31-e32.

Kalet, A. L., Sanger, J., Chase, J., Keller, A., Schwartz, M. D., Fishman, M. L., Garfall, A. L. & Kitay, A. 2007. Promoting professionalism through an online professional development portfolio: successes, joys, and frustrations. *Academic Medicine,* 82**,** 1065-1072.

Kaphagawani, N. & Useh, U. 2013. Analysis of nursing students learning experiences in clinical practice: Literature Review. *Ethno Med,* 7**,** 181-185.

Kaptelinin, V., Kuutti, K. & Bannon, L. 1995. Activity theory: Basic concepts and applications. *Human-computer interaction.* Springer: 189-201.

Kardos, R., Cook, J., Butson, R. & Kardos, T. 2009. The development of an ePortfolio for life-long reflective learning and auditable professional certification. *European Journal of Dental Education,* 13**,** 135-141.

Karlowicz, K. A. 2000. The value of student portfolios to evaluate undergraduate nursing programs. *Nurse Educator,* 25**,** 82.

Karnieli-Miller, O., Strier, R. & Pessach, L. 2009. Power relations in qualitative research. *Qualitative health research,* 19**,** 279-289.

Karnieli-Miller, O., Vu, T. R., Holtman, M. C., Clyman, S. G. & Inui, T. S. 2010. Medical students' professionalism narratives: a window on the informal and hidden curriculum. *Academic Medicine,* 85**,** 124-133.

Keat, R. & Urry, J. 1982. *Social theory as science*, Routledge & K. Paul.

Keengwe, J., Onchwari, G. & Onchwari, J. 2009. Technology and student learning: Towards a learner-centered teaching model. *AACE Journal,* 17**,** 11-22.

Keim, K. S., Gates, G. E. & Johnson, C. A. 2001. Dietetics Professionals have a Positive Perception of Professional Development. *Journal of the American Dietetic Association,* 101**,** 820-824.

Kelly, M. G. & Haber, J. 2006. National Educational Technology Standards for Students: Resources for Student Assessment. International Society for Technology in Education (ISTE).

Kenny, N. P., Mann, K. V. & MacLeod, H. 2003. Role modeling in physicians' professional formation: reconsidering an essential but untapped educational strategy. *Academic Medicine,* 78**,** 1203-1210.

Khales, B. 2016. Using Electronic Portfolio to Promote Professional Learning Community for Pre-Service Early Childhood Teachers at Alquds University. *Journal of Education and Practice,* 7**,** 127-136.

Kim, L. 2001. Webfolios: Authentically Assessing Prospective Educational Leaders on the Web. Technology and Teacher Education Annual, 1, 517-521.

Kimball, M. 2005. Database e-portfolio systems: A critical appraisal. *Computers and Composition,* 22**,** 434-458.

King, N. & Horrocks, C. 2010. *Interviews in Qualitative Research*, SAGE Publications.

Klenke, K. 2008. Qualitative Research in the Study of Leadership, Emerald.

Klenowski, V. 2002. *Developing Portfolios for Learning and Assessment: Processes and Principles*, RoutledgeFalmer.

Knapp, J. 1975. A guide for assessing prior experience through portfolios, Education Testing Service, Cooperative Assessment of Experiential Learning, Princeton, NJ.

Knott, C. & Scragg, T. 2016. *Reflective Practice in Social Work*, SAGE Publications.

Knowles, M. 1973. The adult learner: a neglected species. Houston: Gulf Publishing Company.

Knowles, M. S. 1984. *The adult learner: a neglected species*, Gulf Pub. Co.

Kolb, D. A. 1984. *Experiential Learning: Experience as the Source of Learning and Development*, Prentice-Hall.

Kolb, S. M. 2012. "Grounded theory and the constant comparative method: valid research strategies for educators." Journal of Emerging Trends in Educational Research and Policy Studies **3**(1): 83-86.

Kostrzewski, A. J., Dhillon, S., Goodsman, D. & Taylor, K. M. 2008. The impact of portfolios on health professionals' practice: a literature review. *International Journal of Pharmacy Practice,* 16**,** 339-345.

Kovalchick, A. & Dawson, K. 2004. *Education and Technology: An Encyclopedia*, ABC-CLIO.

Kozulin, A. 1998. Psychological tools: A sociocultural approach to education, Harvard Univ Pr.

Kulavuz-Onal, D. & Vásquez, C. 2013. Reconceptualising fieldwork in a netnography of an online community of English language teachers. *Ethnography and Education,* 8**,** 224-238.

Kuutti, K. 1996. Activity theory as a potential framework for human-computer interaction research. *Context and consciousness: Activity theory and human-computer interaction***,** 17-44.

Kvale, S. 2006. Dominance through interviews and dialogues. *Qualitative inquiry,* 12**,** 480-500.

Kwon, S. 2016. *Gerontechnology: Research, Practice, and Principles in the Field of Technology and Aging*, Springer Publishing Company.

Labissiere, Y. & Reynolds, C. 2004. Using electronic portfolios as a pedagogical practice to enhance student learning. *Division of Instructional Technology, George Mason University. Accessed,* 11**,** 06.
Lambert, S. R. & Corrin, L. E. 2007. Moving towards a university-wide implementation of an ePortfolio tool. Australian Journal of Educational Technology 23, 2007, 1-16

Langendyk, V., Mason, G. & Wang, S. 2016. How do medical educators design a curriculum that facilitates student learning about professionalism? *International journal of medical education,* 7**,** 32.

Lantolf, J. P. 2000. "Introducing sociocultural theory." Sociocultural theory and second language learning: 1-26.

Laryea, S. 2013. Feedback provision and use in teaching and learning: a case study. *Education+ Training,* 55**,** 665-680.

Lave, J. & Wenger, E. 1991. *Situated learning: Legitimate peripheral participation*, Cambridge university press.

Lawrence-Lightfoot, S. & Davis, J. H. 1997. *The Art and Science of Portraiture*, Jossey-Bass.

Lawson, M., Nestel, D. & Jolly, B. 2004. An e-portfolio in health professional education. *Medical Education,* 38**,** 569-570.

Leask, M. & Younie, S. 2001. Communal constructivist theory: information and communications technology pedagogy and internationalisation of the curriculum. *Journal of Information Techology for Teacher Education,* 10**,** 117-134.

Lee, A. G., Beaver, H. A., Boldt, H. C., Olson, R., Oetting, T. A., Abramoff, M. & Carter, K. 2007. Teaching and assessing professionalism in ophthalmology residency training programs. *Survey of ophthalmology,* 52**,** 300-314.

Lee, M. J. & McLoughlin, C. 2007. Teaching and learning in the Web 2.0 era: Empowering students through learner-generated content. *International journal of instructional technology and distance learning,* 4**,** 21-34.

Lee, M. J. W. 2010. *Web 2.0-Based E-Learning: Applying Social Informatics for Tertiary Teaching: Applying Social Informatics for Tertiary Teaching*, Information Science Reference.

Lee, Y., Bien, Z. Z., Mokhtari, M., Kim, J. T., Park, M., Kim, J., Lee, H. & Khalil, I. 2010. *Aging Friendly Technology for Health and Independence: 8th International Conference on Smart Homes and Health Telematics, ICOST 2010, Seoul, Korea, June 22-24, 2010, Proceedings*, Springer Berlin Heidelberg.

Leidner, D. E. & Jarvenpaa, S. L. 1995. The use of information technology to enhance management school education: A theoretical view. *MIS quarterly***,** 265-291.

Leijen, Ä., Lam, I., Wildschut, L., Simons, P. R.-J. & Admiraal, W. 2009. Streaming video to enhance students' reflection in dance education. *Computers & Education,* 52**,** 169-176.

Leitch, R. & Day, C. 2000. Action research and reflective practice: Towards a holistic view. *Educational Action Research,* 8**,** 179-193.

Leney, T., QCA, L. & UK BIBB, B. 2004. Achieving the Lisbon goal: The contribution of VET. London.

Leontiev, A. N. 1981. *Problems of the development of the mind,* Moscow Progress.

Levett-Jones, T. L. 2007. Facilitating reflective practice and self-assessment of competence through the use of narratives. *Nurse education in practice,* 7**,** 112-119.

Levett-Jones, T., Lathlean, J., Higgins, I. & McMillan, M. 2009. Staff–student relationships and their impact on nursing students' belongingness and learning. *Journal of advanced nursing,* 65**,** 316-324.

Lewis, C. E., Tillou, A., Yeh, M. W., Quach, C., Hiatt, J. R. & Hines, O. J. 2010. Web-based portfolios: A valuable tool for surgical education. *Journal of Surgical Research,* 161**,** 40-46.

Liang, X. 2007. Using E-Observation to Conduct Qualitative Research Online- A Research Note.

Lin, Q. 2008. Preservice teachers' learning experiences of constructing e-portfolios online. *The Internet and Higher Education,* 11**,** 194-200.

Lincoln, Y. S. & Guba, E. G. 1985. *Naturalistic inquiry*, Sage Publications.
Lind, V. 2007. e-Portfolios in music teacher education. *Innovate: Journal of Online Education,* 3**,** 4.

Lizzio, A. & Wilson, K. 2008. Feedback on assessment: students' perceptions of quality and effectiveness. *Assessment & Evaluation in Higher Education,* 33**,** 263-275.

Lorenzo, G. & Ittelson, J. 2005. An overview of e-portfolios. *Educause learning initiative,* 1**,** 1-27.

Loughran, J. J. 1996. *Developing Reflective Practice: Learning about Teaching and Learning Through Modelling*, Falmer Press.

Love, T. & Cooper, T. 2010. The Central Role of Commentary on Evidence in e-portfolios. *In:* BUZETTO-MOORE, N. (ed.) *The e-portfolio paradigm: Informing, Educating, Assessing, and Managing with e-portfolios.* Informing Science Press.

Lowden, K., Hall, S., Elliot, D. & Lewin, J. 2011. Employers' perceptions of the employability skills of new graduates. *London: Edge Foundation*.

Lumsden, J. A. 2007. Development and implementation of an e-portfolio as a university-wide program. *New Directions for Student Services,* 43-63.

Lundberg, G. D. 1991. Promoting professionalism through self-appraisal in this critical decade. *JAMA,* 265**,** 2859-2859.

Lynch, L. L. & Purnawarman, P. 2004. Electronic portfolio assessments in u.s. educational and instructional technology programs: Are they supporting teacher education? *TechTrends,* 48**,** 50-56.

Lyons, N. 2010. *Handbook of Reflection and Reflective Inquiry: Mapping a Way of Knowing for Professional Reflective Inquiry*, Springer US.

Mack, N. & Woodsong, C. 2005. *Qualitative Research Methods: A Data Collector's Field Guide,* United States. , FLI Agency for International Development.

Mack, N. and C. Woodsong 2005. Qualitative Research Methods: A Data Collector's Field Guide. United States. , FLI Agency for International Development.

Maidment, Y. G., Rennie, J. S. & Thomas, M. 2006. Revalidation of general dental practitioners in Scotland: The results of a pilot study Part 2 - acceptability to practitioners. *Br Dent J,* 200**,** 455-458.

Maldonado, J. G., Mora, M., García, S. & Edipo, P. 2001. Personality, sex and computer-mediated communication through the Internet. *Anuario de Psicologia,* 32**,** 51-62.

Mann, K., Gordon, J. & MacLeod, A. 2009. Reflection and reflective practice in health professions education: a systematic review. *Advances in Health Sciences Education,* 14**,** 595-621.

Marshall, C. and G. B. Rossman 2006. Designing Qualitative Research, Sage Publications.

Marshall, C. and G. B. Rossman 2010. Designing Qualitative Research, SAGE Publications.

Martimianakis, M. A., Maniate, J. M. & Hodges, B. D. 2009. Sociological interpretations of professionalism. *Medical education,* 43**,** 829-837.

Marton, F. & Säljö, R. 1976. On qualitative differences in learning: I—Outcome and process. *British journal of educational psychology,* 46**,** 4-11.

Masella, R. S. 2007. Renewing professionalism in dental education: overcoming the market environment. *Journal of Dental Education,* 71**,** 205-216.

Masters, J. 2013. Scaffolding Pre-Service Teachers Representing Their Learning Journeys with ePortfolios. *Journal of Learning Design,* 6**,** 1-9.

Mather, C. E-portfolios: Lessons from an interdisciplinary collaboration. The School of nursing and Midwifery experience abstract. EDULEARN11-International Conference on Education and New Learning Technologies, 2011. 1201.

Mathers, N., Challis, M., Howe, A. & Field, N. 1999. Portfolios in continuing medical education–effective and efficient? *Medical education,* 33**,** 521-530.

Maxwell, J. A. 2012. *A Realist Approach for Qualitative Research*, SAGE Publications.

Maykut, P. & Morehouse, R. 2002. *Beginning Qualitative Research: A Philosophical and Practical Guide*, Taylor & Francis.

Mazlan, K. S., Sui, L. K. M. & Jano, Z. 2015. Designing an Eportfolio Conceptual Framework to Enhance Written Communication Skills among Undergraduate Students. *Asian Social Science,* 11**,** 35.

McAllister, L. M., Hallam, G. C. & Harper, W. E. 2008. The ePortfolio as a tool for lifelong learning: Contextualising Australian practice.

Mccowan, C., Harper, W. & Hauville, K. 2005. Student e-portfolio: The successful implementation of an e-portfolio across a major Australian university. *Australian Journal of Career Development,* 14**,** 40-51.

McCready, T. 2007. Portfolios and the assessment of competence in nursing: a literature review. *International journal of nursing studies,* 44**,** 143-151.

McDonald, B. & Boud, D. 2003. The impact of self-assessment on achievement: The effects of self-assessment training on performance in external examinations. *Assessment in Education: Principles, Policy & Practice,* 10**,** 209-220.

McFarlane, A. 2003. Editorial. Assessment for the Digital Age. *Assessment in Education: Principles, Policy & Practice,* 10**,** 261-266.
McKenzie, J. F., Cleary, M. J., McKenzie, B. L. & Stephen, C. E. 2002. E-Portfolios: Their Creation and Use by Pre-service Health Educator *The International Electronic Journal of Health Education* [Online], 4.

McKinney, M. 1998. Preservice teachers' electronic portfolios: Integrating technology, self-assessment, and reflection. *Teacher Education Quarterly***,** 85-103.

McKinney, M. S. & Spialek, M. L. 2017. The SAGE Encyclopedia of Communication Research Methods.

McMullan, M. 2006. Students' perceptions on the use of portfolios in pre-registration nursing education: A questionnaire survey. *International Journal of Nursing Studies,* 43**,** 333-343.

McMullan, M. 2008. Using portfolios for clinical practice learning and assessment: The pre-registration nursing student's perspective. *Nurse Education Today,* 28**,** 873-879.

McMullan, M., Endacott, R., Gray, M. A., Jasper, M., Miller, C. M. L., Scholes, J. & Webb, C. 2003. Portfolios and assessment of competence: a review of the literature. *Journal of Advanced Nursing,* 41**,** 283-294.

McNeill, H., Brown, J. M. & Shaw, N. J. 2010. First year specialist trainees' engagement with reflective practice in the e-portfolio. *Advances in health sciences education,* 15**,** 547-558.

McNeill, K. L., Lizotte, D. J., Krajcik, J. & Marx, R. W. 2006. Supporting students' construction of scientific explanations by fading scaffolds in instructional materials. *The Journal of the Learning Sciences,* 15**,** 153-191.

McWhorter, R. R., Delello, J. A., Roberts, P. B., Raisor, C. M. & Fowler, D. A. 2013. A cross-case analysis of the use of web-based eportfolios in higher education. *Journal of Information Technology Education,* 12.

Mellon, C. A. 1990. Naturalistic inquiry for library science: methods and applications for research, evaluation, and teaching, Greenwood Press.

Melville, C., Rees, M., Brookfield, D. & Anderson, J. 2004. Portfolios for assessment of paediatric specialist registrars. *Medical Education,* 38**,** 1117-1125.

Merriam, S. B. 2009. Qualitative research: A guide to design and implementation, Jossey-Bass.

Meyer, E., Abrami, P., Wade, A. & Scherzer, R. 2011. Electronic portfolios in the classroom: Factors impacting teachers' integration of new technologies and new pedagogies. *Technology, Pedagogy and Education,* 20**,** 191-207.

Meyer, S. B. and B. Lunnay (2013). "The application of abductive and retroductive inference for the design and analysis of theory-driven sociological research." Sociological research online 18(1): 12.

Mezirow, J. 1990. How critical reflection triggers transformative learning. *Fostering critical reflection in adulthood,* 1**,** 20.

Mezirow, J. 1994. Understanding transformation theory. *Adult education quarterly,* 44**,** 222-44.

Mezirow, J. 1997. Transformative learning: Theory to practice. *New directions for adult and continuing education,* 1997**,** 5-12.

Miles, M. B. and A. M. Huberman 1994. Qualitative Data Analysis: An Expanded Sourcebook, Sage Publications.

Miller, B. K. 1988. A model for professionalism in nursing. *Today's OR nurse,* 10**,** 18.

Miller, F. A. and K. Alvarado 2005. "Incorporating documents into qualitative nursing research." Journal of Nursing Scholarship 37(4): 348-353.

Miller, G. E. 1990. The assessment of clinical skills/competence/performance. *Academic medicine,* 65**,** S63-7.

Mills, A. J., Durepos, G. & Wiebe, E. 2009. *Encyclopedia of case study research*, Sage Publications.

Mills, J., Bonner, A. & Francis, K. 2008. The development of constructivist grounded theory. *International journal of qualitative methods,* 5(1)**:** 25-35.

Mingers, J. & Willcocks, L. P. 2005. *Social Theory and Philosophy for Information Systems*, Wiley.

Mingers, J., A. Mutch and L. Willcocks 2013. "Critical realism in information systems research." MIS Quarterly **37**(3): 795-802.

Mitchell, M. 1994. *The views of students and teachers on the use of portfolios as a learning and assessment tool in midwifery education*. Nurse Education Today, 14, 38-43.

Mobarhan, R., Alhazmi, A. K., Rahman, A. A. & Majidi, M. Why Students Use Electronic portfolio: from Uses and gratification Perspective. Pacis, 2014. 112.

Moon, J. 2005. Guide for Busy Academics No. 4: Learning Through Reflection York Higher Education Academy.

Moon, J. A. 1999a. *Learning Journals: A Handbook for Academics, Students and Professional Development*, Kogan Page.

Moon, J. A. 1999b. *Reflection in Learning and Professional Development: Theory and Practice*, Kogan Page.

Moon, J. A. 2004. *A handbook of reflective and experiential learning: Theory and practice*, Psychology Press.

Moon, J. A. 2006. *Learning Journals: A Handbook for Reflective Practice and Professional Development*, Routledge.

Moore, C. & Teather, S. 2013. Engaging students in peer review: Feedback as learning.

Moores, A. & Parks, M. 2010. Twelve tips for introducing E-Portfolios with undergraduate students. *Medical teacher,* 32**,** 46-49.

Morrow, G., Burford, B., Rothwell, C., Carter, M., McLachlan, J. & Illing, J. 2011. Professionalism in healthcare professionals. *Report to the Health and Care Professions Council. London: HCPC*.

Morse, J. M. (2000). "Determining sample size." Qualitative health research 10(1): 3-5.

Morse, J. M. 2000. Determining sample size. *Qualitative health research,* 10**,** 3-5.

Mosely, C. 2005. The Value of Professional Teaching Portfolios to Prospective Employers: School Administrators' Views. *Professional Educator,* 27**,** 58-72.

Mossop, L. H. & Cobb, K. 2013. Teaching and assessing veterinary professionalism. *Journal of veterinary medical education,* 40**,** 223-232.

Murphy, E. 2013. *Activity Theory Perspectives on Technology in Higher Education*, IGI Global.

Murphy, G. A. & Calway, B. A. 2007 . Professional development-the case for deep learning. Paper presented at the British Educational Research Association Annual Conference, 2007. 8.

Murphy, S. & Smith, M. A. 2013. Assessment Challenges in the Common Core Era. *English Journal,* 103**,** 104.

Murray, C. & Muir, D. 'Knowing Me Knowing You': Tutor Practices of Encouraging Student Learning Through E-portfolio. International Journal of Clinical Skills. 2011;5:24–29.

Murray, C. Is Anybody Out There? Developing the Skills for Lifelong Learning: Towards a Model of Engagement in the E-Portfolio Process'. 2006. E-portfolio 2006 Conference, Oxford.

Murray, C., Pellow, A., Hennessy, S., Currant, N. & Higgison, C. 2006. User perspectives on the pedagogical differences between electronic and paper portfolios. 2006.

Murray, P. J. 1994. Portfolios and accreditation of prior experiential learning (apel) make credits - or problems. *Nurse Education Today,* 14**,** 232-237.

Mwanza, D. 2002. *Towards an activity-oriented design method for HCI research and practice.* Open University.

Mwanza-Simwami, D. 2011. AODM as a framework and model for characterising learner experiences with technology. *Journal of e-Learning and Knowledge Society (Je-LKS),* 7**,** 75-85.

Nairn, S., O'Brien, E., Traynor, V., Williams, G., Chapple, M. & Johnson, S. 2006. Student nurses' knowledge, skills and attitudes towards the use of portfolios in a school of nursing. *Journal of Clinical Nursing,* 15**,** 1509-1520.

Narciss, S., Sosnovsky, S., Schnaubert, L., Andrès, E., Eichelmann, A., Goguadze, G. & Melis, E. 2014. Exploring feedback and student characteristics relevant for personalizing feedback strategies. *Computers & Education,* 71**,** 56-76.

Nardi, B. A. (1996). "Studying context: A comparison of activity theory, situated action models, and distributed cognition." Context and consciousness: Activity theory and human-computer interaction: 69-102.

Neimeyer, G. J. & Taylor, J. M. 2012. *Continuing professional development and lifelong learning: Issues, impacts and outcomes*, Nova Science.

Ng, C. K. C., White, P. & McKay, J. C. 2007. A review of the development of electronic portfolios in education and health care disciplines: supporting students' learning and continuing professional development. Radiographer-East Melbourne , 54, 24.

Nicol, D. J. & Macfarlane-Dick, D. 2006. Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in higher education,* 31**,** 199-218.

Nielsen, K., Pedersen, B. D. & Helms, N. H. 2015. EPortfolio and learning styles in clinical nursing education. *Journal of Nursing Education and Practice,* 5**,** p54.

Niemi, P. 1997. Medical students' professional identity: self-reflection during the preclinical years. *Medical education,* 31**,** 408-415.

NMAHP Professionalism Report 2012. Professionalism in nursing, midwifery and the allied health professions in Scotland: a report to the Coordinating Council for the NMAHP Contribution to the Healthcare Quality Strategy for NHSScotland. Scottish government.

NMC 2004. Standards of proficiency for pre-registration midwifery programmes of education. *NMC, London*.

NMC 2008. Standards to support learning and assessment in practice. Availble at:

https://www.nmc.org.uk/globalassets/sitedocuments/standards/nmc-standards-to-support-learning-assessment.pdf [accessed 15 March. 2016].

NMC. 2016. How to revalidate with the NMC: Requirements for renewing your registration. Available at: http://revalidation.nmc.org.uk/welcome-to-revalidation [Accessed 12 Jan. 2017].

Noel, L. 2015. Using Blogs to Create a Constructivist Learning Environment. *Procedia - Social and Behavioral Sciences,* 174**,** 617-621.

O'Callaghan, A. 2013. Emotional congruence in learning and health encounters in medicine: addressing an aspect of the hidden curriculum. *Advances in Health Sciences Education,* 18**,** 305-317.

O'Gorman, C. 2013. A critical realist study of dynamic capabilities in SMEs.

O'Grady, E. T. 2008. Advanced practice registered nurses: The impact on patient safety and quality. In: Hughes RG, editor. Patient Safety and Quality: An Evidence-Based Handbook for Nurses. Rockville (MD): Agency for Healthcare Research and Quality. US. Available at: https://www.ncbi.nlm.nih.gov/books/NBK2641

O'Sullivan, S. Use of e-Portfolios in Undergraduate Education and a Postgraduate Research Training Programme, ED4LIFE. Conference proceedings. New perspectives in science education, 2014. libreriauniversitaria. it Edizioni, 112.

Oakley, G., Pegrum, M. & Johnston, S. 2014. Introducing e-portfolios to pre-service teachers as tools for reflection and growth: Lessons learnt. *Asia-Pacific Journal of Teacher Education,* 42**,** 36-50.

Ok, A. & Erdogan, M. 2010. Prospective teachers' perceptions on different aspects of portfolio. *Asia Pacific Education Review,* 11**,** 301-310.

Oliver, H., Colm , S., Shruti, U. & Rajini, J. 2015. The economic impact of Basic Digital Skills and inclusion in the UK London: Centre for Economics and Business Research (CEBR).

Oradini, F. & Saunders, G. 2007. Introducing e-portfolios across a paper dominated university. *ALT Online Newsletter.* Available at: alt. ac. uk/e_article000925026. cfm [Accessed 10 January. 2016].

Ornstein, A. C. & Hunkins, F. P. 2004. *Curriculum--foundations, principles, and issues*, Allyn & Bacon.

O'Sullivan, H., van Mook, W., Fewtrell, R. & Wass, V. 2012. Integrating professionalism into the curriculum: AMEE Guide No. 61. *Medical teacher,* 34**,** e64-e77.

O'sullivan, P. S., Reckase, M. D., McClain, T., Savidge, M. A. & Clardy, J. A. 2004. Demonstration of portfolios to assess competency of residents. *Advances in Health Sciences Education,* 9**,** 309-323.

Owens, J. 2011. An Introduction to Critical Realism as a Meta-Theoretical Research Perspective. Series Paper No: 1.

Pagani, M. 2005. *Encyclopedia of Multimedia Technology and Networking*, Idea Group Reference.

Pakala, K. & Bose, D. 2015. Use of Mobile Learning Strategies and Devices for E-Portfolio Content Creation in an Engineering Thermodynamics and Fluid Mechanics Classes: Student Perceptions.

Paniagua-Ramirez, C., Barone, C. & Torres, I. 2004. Making the paradigm shift: A review of nursing pedagogical models and approaches. *Enfermería Global,* 4**,** 1-17.

Papa Jr, F. & Baxter, I. 2008. Hiring Teachers in New York's Public Schools: Can the Principal Make a Difference? *Leadership and Policy in Schools,* 7**,** 87-117.

Papadakis, M. A., Hodgson, C. S., Teherani, A. & Kohatsu, N. D. 2004. Unprofessional behavior in medical school is associated with subsequent disciplinary action by a state medical board. *Academic Medicine,* 79**,** 244-249.

Park, Y. 2015. "Understanding Synchronous Computer-Mediated Classroom Discussion through Cultural-Historical Activity Theory." Turkish Online Journal of Educational Technology 14(2): 219.

Parker Webster, J. & Marques da Silva, S. 2013. Doing educational ethnography in an online world: methodological challenges, choices and innovations. *Ethnography and Education,* 8**,** 123-130.

Parker, M., Ndoye, A. & Ritzhaupt, A. D. 2012. Qualitative analysis of student perceptions of e-portfolios in a teacher education program. *Journal of Digital Learning in Teacher Education,* 28**,** 99-107.

Paterson, C. & Chapman, J. 2013. Enhancing skills of critical reflection to evidence learning in professional practice. *Physical Therapy in Sport,* 14**,** 133-138.

Patton, M. Q. 2002a. *Qualitative Research & Evaluation Methods*, SAGE Publications.

Patton, M. Q. 2014. *Qualitative Research & Evaluation Methods: Integrating Theory and Practice: Integrating Theory and Practice*, SAGE Publications.

Paulson, F. L., Paulson, P. R. & Meyer, C. A. 1991. What Makes a Portfolio a Portfolio? *Educational leadership,* 48**,** 60-63.

Pawson, R. & Tilley, N. 1997. *Realistic Evaluation*, SAGE Publications.

Pea, R. D. 2004. The social and technological dimensions of scaffolding and related theoretical concepts for learning, education, and human activity. *The journal of the learning sciences,* 13**,** 423-451.

Peacock, S. & Murray, S. 2009. Learners' initial expectations and experiences of ePortfolios: A pilot study. *Brookes eJournal of Learning and Teaching,* 2.

Peacock, S., Morss, K., Scott, A., Hislop, J., Irvine, L., Murray, S. & Girdler, S. T. 2009. Using ePortfolios in higher education to encourage learner reflection and support personalised learning. *Technology-supported environments for personalized learning: Methods and case studies***,** 185-211.

Peacock, S., Murray, S. & Scott, A. 2010. Exploring health science learner experiences of formative and summative feedback in a networked environment through ePortfolios. Proceedings of the 7th International Conference on Networked Learning 2010. Available at: http://www.lancaster.ac.uk/fss/organisations/netlc/past/nlc2010/abstracts/PDFs/Peacock.pdf [accessed 15 Jun 2016].

Peacock, S., Murray, S., Scott, A. & Kelly, J. 2011. The Transformative Role of ePortfolios: Feedback in Healthcare Learning International Journal of ePortfolio. *International Journal of ePortfolio,* 1, 33-48.

Pearce, R. 2003. *Profiles and portfolios of evidence*, Nelson Thornes.

Peate, I. 2013. *The Student Nurse Toolkit: An Essential Guide for Surviving Your Course*, Wiley.

Pelet, J.-E. 2013. *E-Learning 2.0 technologies and web applications in higher education*, IGI Global.
Pelliccione, L. & Dixon, K. 2008. ePortfolios: Beyond assessment to empowerment in the learning landscape. *Hello! Where are you in the landscape of educational technology*.

Perry, W. & Framework, A. F. L. 2009. E-Portfolios for RPL Assessment: Key Findings on Current Engagement in the Vet Sector: Final Report. *Canberra, Act*.

Phillips, C. B. 2009. Student portfolios and the hidden curriculum on gender: mapping exclusion. *Medical education,* 43**,** 847-853.

Phillips, D. C. 1995. The good, the bad, and the ugly: The many faces of constructivism. *Educational researcher,* 24**,** 5-12.

Piaget, J. 1973. To understand is to invent: The future of education. Grossman Publishers.

Pincombe, J., McKellar, L., Weise, M., Grinter, E. & Beresford, G. 2010. ePortfolio in Midwifery Practice:"The Way of The Future". *Women and Birth,* 23**,** 94-102.

Pine, G. J. & Boy, A. V. 1977. *Learner Centered Teaching: A Humanistic View*, Love.

Pink, J., Cadbury, N. & Stanton, N. 2008. Enhancing student reflection: the development of an e-portfolio. *Medical education,* 42**,** 1132-1133.

Pitts, J., Coles, C. & Thomas, P. 1999. Educational portfolios in the assessment of general practice trainers: reliability of assessors. *Medical education,* 33**,** 515-520.

Pitts, J., Coles, C., Thomas, P. & Smith, F. 2002. Enhancing reliability in portfolio assessment: discussions between assessors. *Medical Teacher,* 24**,** 197-201.

Ploeg, J. 1999. "Identifying the best research design to fit the question. Part 2: qualitative designs." Evidence Based Nursing **2**(2): 36-37.

Polit, D. F. & Beck, C. T. 2010. Generalization in quantitative and qualitative research: Myths and strategies. *International journal of nursing studies,* 47**,** 1451-1458.

Polit, D. F. & Beck, C. T. 2013. *Essentials of Nursing Research: Appraising Evidence for Nursing Practice*, Wolters Kluwer Health.

Polit, D. F. and Beck, C. T. 2010. "Generalization in quantitative and qualitative research: Myths and strategies." International journal of nursing studies 47(11): 1451-1458.

Pololi, L. & Price, J. 2000. Validation and use of an instrument to measure the learning environment as perceived by medical students. *Teaching and learning in Medicine,* 12**,** 201-207.

Pope, C., Ziebland, S. & Mays, N. 2000. Qualitative research in health care: Analysing qualitative data. *BMJ: British Medical Journal,* 320**,** 114.

Porter, S. 2008. *Tidy's Physiotherapy*, Elsevier Health Sciences UK.

Precision Consultancy 2007. Graduate Employability Skills. Prepared for the Business, Industry and Higher

Price, A. 1994. Midwifery portfolios: making reflective records. *Modern Midwife,* 4**,** 35-38.

Procter, C. & Whatley, J. 2011. Using e-portfolios to support student work placements. Paper presented at the Education in a Changing Environment (ECE) 6th International Conference : Creativity and Engagement in Higher Education, 2011, The University of Salford, Greater Manchester, UK. Available at: http://usir.salford.ac.uk/17008/ [accessed 22 August. 2016].

Pullman, G. 2002. Electronic portfolios revisited: The efolios project. *Computers and Composition,* 19**,** 151-169.

Puntambekar, S. & Hubscher, R. 2002. Scaffolding in Complex Learning Environments: What we have gained and what we have missed. *Educational Psychologist,* 40**,** 1-12.

Rafferty, A. M., Allcock, N. & Lathlean, J. 1996. The theory/practice 'gap': taking issue with the issue. *Journal of Advanced Nursing,* 23**,** 685-691.

Ralabate, P. K. 2011. Universal design for learning: Meeting the needs of all students. *The ASHA Leader,* 16**,** 14-17.

RCVS. 2015. *Continuing Professional Development (CPD) for vets*. Available at: http://www.rcvs.org.uk/education/lifelong-learning-for-veterinary-surgeons/continuing-professional-development-cpd-for-vets/ [Accessed 12 Jan. 2017].

Rees, C. E. & Sheard, C. E. 2004. The reliability of assessment criteria for undergraduate medical students' communication skills portfolios: The Nottingham experience. *Medical education,* 38**,** 138-144.

Reinders, H. 2010. Towards a classroom pedagogy for learner autonomy: A framework of independent language learning skills. *Australian Journal of Teacher Education*, 35 (5), 40-55.

Rejon, J. C. & Watts, C. 2013. Supporting professional nurse socialisation: Findings from evidence reviews. London: Royal College of Nursing.

Reynolds, N. & Rice, R. 2006. *Portfolio Keeping: A Guide for Students*, Bedford/St. Martin's.

Rhodes, T. L. 2010. Making learning visible and meaningful through electronic portfolios. *Change: The Magazine of Higher Learning,* 43**,** 6-13.

Rich, P. J. & Hannafin, M. 2009. Video annotation tools technologies to scaffold, structure, and transform teacher reflection. *Journal of Teacher Education,* 60**,** 52-67.

Riedinger, B. 2006. Mining for meaning: Teaching students how to reflect. *Handbook of Research on ePortfolios.*

Ritchie, J. & Lewis, J. 2003. *Qualitative Research Practice: A Guide for Social Science Students and Researchers*, SAGE Publications.

Ritchie, J., Lewis, J., Lewis, P. S. P. J., Nicholls, C. M. N. & Ormston, R. 2013. *Qualitative Research Practice: A Guide for Social Science Students and Researchers*, SAGE Publications.

Roberts, A. 2009. Encouraging reflective practice in periods of professional workplace experience: The development of a conceptual model. *Reflective practice,* 10**,** 633-644.

Robson, C. 2002. *Real world research: A resource for social scientists and practitioner-researchers*, Wiley-Blackwell.

Rogers, P. C., Liddle, S. W., Peter, C., Doxey, A. & Brady, I. 2007. Web 2.0 learning platform: Harnessing collective intelligence. *Turkish Online Journal of Distance Education,* 8.

Rogoff, B. 1990. Apprenticeship in thinking: Cognitive development in social context, Oxford University Press.

Rolheiser, C. & Ross, J. 2000. Student self-evaluation–What do we know. *Orbit,* 30**,** 33-36.

Routman, R. 2005. Writing essentials: Raising expectations and results while simplifying teaching. *Education Review//Reseñas Educativas*.

Rowh, M. 2008. Building an e-portfolio. *Career world,* 37**,** 26-28.

Rowley, J. 2016. *ePortfolios in Australian Universities*, Springer Singapore.

Rubin, H. J. and I. S. Rubin (2012). Qualitative Interviewing: The Art of Hearing Data, SAGE Publications.

Rubinshteĭn, S. L. 1964. *El desarrollo de la psicología: principios y métodos [The development of psychology: Principles and methods]. ,* Habana, Cuba:, Editora del Consejo Nacional de Universidades.

Ruiz, J. G., Qadri, S. S., Karides, M., Castillo, C., Milanez, M. & Roos, B. A. 2009. Fellows' perceptions of a mandatory reflective electronic portfolio in a geriatric medicine fellowship program. *Educational Gerontology,* 35**,** 634-652.

Russell, D. L. & Schneiderheinze, A. 2005. Understanding innovation in education using activity theory. *Journal of Educational Technology & Society,* 8**,** 38-53.

Salloch, S., Sandow, V., Schildmann, J. & Vollmann, J. 2016. *Ethics and Professionalism in Healthcare: Transition and Challenges*, Taylor & Francis.

Samuels, M. & Betts, J. 2007. Crossing the threshold from description to deconstruction and reconstruction: Using self-assessment to deepen reflection. *Reflective Practice,* 8**,** 269-283.

Sandars, J. 2009. The use of reflection in medical education: AMEE Guide No. 44. *Medical teacher,* 31**,** 685-695.

Sandelowski, M. 1995. Sample size in qualitative research. *Research in nursing & health,* 18**,** 179-183.

Saunders, W. L. 1992. The constructivist perspective: Implications and teaching strategies for science. School Science and Mathematics, 92, 136-141.

Sayer, R. A. 2000. *Realism and social science*, Sage.

Schaffer, M. A., Nelson, P. & Litt, E. 2005. Using portfolios to evaluate achievement of population-based public health nursing competencies in baccalaureate nursing students. *Nursing Education Perspectives,* 26**,** 104-112.

Schmitz, C. C., Whitson, B. A., Van Heest, A. & Maddaus, M. A. 2010. Establishing a Usable Electronic Portfolio for Surgical Residents: Trying to Keep It Simple. *Journal of Surgical Education,* 67**,** 14-18.

Scholes, J., Webb, C., Gray, M., Endacott, R., Miller, C., Jasper, M. & McMullan, M. 2004. Making portfolios work in practice. *Journal of Advanced Nursing,* 46**,** 595-603.

Schön, D. A. 1983. *The Reflective Practitioner: How Professionals Think in Action*, Basic Books.

Schön, D. A. 1987. *Educating the Reflective Practitioner: Toward a New Design for Teaching and Learning in the Professions*, Wiley.
Schultze, U. & Avital, M. 2011. Designing interviews to generate rich data for information systems research. *Information and Organization,* 21**,** 1-16.

Scottish Educational Research Association (SERA) 2005. Ethical Guidelines for Educational Research

Scribner, S. (1990). "A sociocultural approach to the study of mind." Theories of the evolution of knowing: 107-120.

Sears, A. and J. A. Jacko (2007). The Human-Computer Interaction Handbook: Fundamentals, Evolving Technologies and Emerging Applications, Second Edition, CRC Press.

Selwyn, N. The digital native–myth and reality. Aslib Proceedings, 2009. Emerald Group Publishing Limited, 364-379.

Shapiro, J., Kasman, D. & Shafer, A. 2006. Words and wards: a model of reflective writing and its uses in medical education. *Journal of Medical Humanities,* 27**,** 231-244.

Sharpe, R., Beetham, H. & de Freitas, S. 2010. *Rethinking Learning for a Digital Age: How Learners are Shaping their Own Experiences*, Taylor & Francis.

Sheahan, L., While, A. & Bloomfield, J. 2015. An exploratory trial exploring the use of a multiple intelligences teaching approach (MITA) for teaching clinical skills to first year undergraduate nursing students. *Nurse education today,* 35**,** 1148-1154.

Shenton, A. K. and S. Hayter (2004). "Strategies for gaining access to organisations and informants in qualitative studies." Education for Information 22(3-4): 223-231.

Sher, W., Williams, A. & Sharkey, R. 2002. The implementation of a university-wide electronic reflective journal to facilitate the development of core skills. *ASCILITE, Auckland, New Zealand*.

Shroff, R. H., Trent, J. & Ng, E. M. 2013. Using e-portfolios in a field experience placement: Examining student-teachers' attitudes towards learning in relationship to personal value, control and responsibility. *Australasian Journal of Educational Technology,* 29.

Shumway, J. & Harden, R. 2003. AMEE Guide No. 25: The assessment of learning outcomes for the competent and reflective physician. *Medical teacher,* 25**,** 569-584.

Siemens, G. 2003. *Learning Ecology, Communities, and Networks: Extending the Classroom. elearnspace*. Available at: http://www.elearnspace.org/Articles/learning_communities.htm [Accessed 15 September. 2016].

Siemens, G. 2005. Connectivism: A learning theory for the digital age. *International Journal of Instructional Technology & Distance Learning,* 2**,** 3-10.

Silva, M. L., Delaney, S. A., Cochran, J. & Jackson, R., & Olivares, C. 2015. Institutional Assessment and the Integrative Core Curriculum: Involving Students in the Development of an ePortfolio System. *International Journal of ePortfolio,* 5**,** 155–167.

Silverman, D. 2006. *Interpreting Qualitative Data: Methods for Analyzing Talk, Text and Interaction*, SAGE Publications.

Skågeby, J. 2011. Online ethnographic methods: Towards a qualitative understanding of user engagement and communication sharing. *Handbook of research on methods and techniques for studying virtual communities***,** 410-28.

Skiba, D. J. 2005. E-portfolios, webfolio, and e-dentity: promises and challenges. *Nurs Educ Perspect,* 26**,** 246-7.

Skiba, J. 2005. E-portfolios, webfolio, and e-dentity: promises and challenges. *Nursing education perspectives,* 26**,** 246-7.

Slade, C., Murfin, K., Gray, M. & George, K. 2014. Master of Midwifery: A postgraduate program's first use of eportfolios. *PebblePad: Personalising the Curriculum.* Pebble Learning Ltd.

Slomka, J., Quill, B., desVignes-Kendrick, M. & Lloyd, L. E. 2008. Professionalism and Ethics in the Public Health Curriculum. *Public Health Reports,* 123**,** 27-35.

Smith, A., McAskill, H. & Jack, K. 2008. *Developing Advanced Skills in Practice Teaching*, Palgrave Macmillan.

Smith, K. & Tillema, H. 2001. Long-term influences of portfolios on professional development. *Scandinavian journal of educational research,* 45**,** 183-203.

Smith, K. & Tillema, H. 2003. Clarifying different types of portfolio use. *Assessment & Evaluation in Higher Education,* 28**,** 625-648.

Smith, K., Clegg, S., Lawrence, E. & Todd, M. J. 2007. The challenges of reflection: students learning from work placements. *Innovations in Education and teaching International,* 44**,** 131-141.

Smits, M. H., Boon, J., Sluijsmans, D. M. & Van Gog, T. 2008. Content and timing of feedback in a web-based learning environment: effects on learning as a function of prior knowledge. *Interactive Learning Environments,* 16**,** 183-193.

Snadden, D., Thomas, M. & Challis, M. 1999. Portfolio-based learning and assessment. *Medical Teacher,* 20**,** 192-199.

Snadden, D., Thomas, M., Griffin, E. & Hudson, H. 1996. Portfolio-based learning and general practice vocational training. *Medical education,* 30**,** 148-152.

Sofaer, S. 1999. "Qualitative methods: what are they and why use them?" Health services research 34(5 Pt 2): 1101.

Somerville, D. & Keeling, J. 2004. A practical approach to promote reflective practice within nursing. *Nursing times,* 100**,** 42.

SoR. 2010. Education and Professional Development Strategy: New Directions.

Sorensen, E. K. & Takle, E. S. 2005. Investigating knowledge building dialogues in networked communities of practice. A collaborative learning endeavour across cultures. *Digital Education Review***,** 50-60.

Souers, C., Kauffman, L., McManus, C. & Parker, V. 2007. Collaborative learning: A focused partnership. *Nurse Educ Pract,* 7**,** 392-398.

Spickard III, A., Denny, J. & Gigante, J. A randomized study of feedback on student write-ups using an electronic portfolio. Annual Symposium proceedings/AMIA Symposium. AMIA Symposium, 2006. 1120-1120.

Srivastava, P. & Hopwood, N. 2009. A practical iterative framework for qualitative data analysis. *International journal of qualitative methods,* 8**,** 76-84.

Stake, R. E. 1995. *The Art of Case Study Research*, SAGE Publications.

Stake, R. E. 2005. "Qualitative case studies." In Denzin, Norman K. & Lincoln, Yvonna S. eds. The sage handbook of qualitative research. Thousand Oaks, CA, Sage.

Stake, R. E. 2013. Multiple Case Study Analysis, Guilford Publications.

Stanley, M. J. C. & Dougherty, J. P. 2010. A paradigm shift in nursing education: A new model. *Nursing Education Perspectives,* 31**,** 378-380.

Stecher, B. 1998. The local benefits and burdens of large-scale portfolio assessment. *Assessment in Education: principles, policy & practice,* 5**,** 335-351.

Stefani, L., Mason, R. & Pegler, C. 2007. *The educational potential of e-portfolios: Supporting personal development and reflective learning*, Routledge.

Stephenson, A. E., Adshead, L. E. & Higgs, R. H. 2006. The teaching of professional attitudes within UK medical schools: reported difficulties and good practice. *Medical education,* 40**,** 1072-1080.

Stern, D. T. 1998. Cultural, Communication, and the informal curriculum: In Search of the Informal Curriculum: When and Where Professional Values Are Taught. *Academic Medicine,* 73**,** S28-30.

Stetsenko, A. P. 1999. Social interaction, cultural tools and the zone of proximal development: In search of a synthesis. In Chaiklin S., Hedegaard M. & Jensen U. J. (Eds). Activity Theory and Social Practice: Cultural-historical approaches. Aarhus: Aarhus University Press, 235–252.

Stewart, S. M. 2013. Making practice transparent through e-portfolio. *Women and Birth,* 26**,** e117-e121.

Stickley, T. & Basset, T. 2007. *Teaching Mental Health*, Wiley.

Stiggins, R. J. 2002. Assessment crisis: The absence of assessment for learning. *Phi Delta Kappan,* 83**,** 758.

Strauss, A. & Corbin, J. M. 1998. *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory*, SAGE Publications.

Strauss, A. L. & Corbin, J. M. 1990. *Basics of qualitative research: grounded theory procedures and techniques*, Sage Publications.

Strawhecker, J., Messersmith, K. & Balcom, A. 2007. The role of electronic portfolios in the hiring of K-12 teachers. *Journal of computing in teacher education,* 24**,** 65-71.

Strivens, J., Baume, D., Grant, S., Owen, C., Ward, R. & Nicol, D. 2009. The role of e-portfolios in formative and summative assessment: Report of the JISC-funded study. *Unpublished study. Centre for Recording Achievement for JISC. Available at: http://www.*

jisc.ac. uk/media/documents/programmes/elearning/eportfinalreport doc [Accessed 15 Jan. 2017].

Struyven, K., Blieck, Y. & De Roeck, V. 2014. The electronic portfolio as a tool to develop and assess pre-service student teaching competences: Challenges for quality. *Studies in Educational Evaluation,* 43**,** 40-54.

Sturman, A. (1999). case study methods. In J.P Keeves and G. Lakomski (eds) Issues in educational research. Oxford, Elsevier Science**:** 103-112.

Sullivan, W. M. 1995. Work and integrity: The crisis and promise of professionalism in America.

Supiano, M. A., Fantone, J. C. & Grum, C. 2002. A Web-based Geriatrics Portfolio to Document Medical Students' Learning Outcomes. *Academic Medicine,* 77**,** 937-938.

Surowiecki, J. 2004. The wisdom of crowds: Why the many are smarter than the few and how collective wisdom shapes business. *Economies, Societies and Nations,* 296.

Sutherland, S. 2008. About PebblePAD. Proceedings of the 6th International Conference on Networked Learning. Available at: http://www.networkedlearningconference.org.uk/past/nlc2008/abstracts/PDFs/Sutherland_540-543.pdf [Accessed 30 August. 2017].

Swallow, V., Clarke, C., Iles, S. & Harden, J. 2006. Work based, lifelong learning through professional portfolios: Challenge or reward? *Pharmacy Education,* 6**,** 77-89.

Swick, H. M. 2000. Toward a normative definition of medical professionalism. *Academic Medicine,* 75**,** 612-616.

Swick, H. M., Szenas, P., Danoff, D. & Whitcomb, M. E. 1999. Teaching professionalism in undergraduate medical education. *Jama,* 282**,** 830-832.

Tam, M. 2000. Constructivism, instructional design, and technology: Implications for transforming distance learning. *Educational Technology & Society,* 3**,** 50-60.

Taras, M. 2001. The use of tutor feedback and student self-assessment in summative assessment tasks: towards transparency

for students and for tutors. *Assessment & Evaluation in Higher Education,* 26**,** 605-614.

Tate, P., Foulkes, J., Neighbour, R., Campion, P. & Field, S. 1999. Assessing physicians' interpersonal skills via videotaped encounters: a new approach for the Royal College of General Practitioners Membership examination. *Journal of health communication,* 4**,** 143-152.

Taylor, S. J. and R. Bogdan (1984). Introduction to qualitative research methods: the search for meanings, Wiley.

Taylor, S., Werthner, P., Culver, D. & Callary, B. 2015. The importance of reflection for coaches in parasport. *Reflective Practice,* 16**,** 269-284.

Temple, V., Allan, G. & Temple, B. Employers' and students' perceptions of electronic employment portfolios. New Zealand and Australian Association for Research in Education conference, 2003. Citeseer.

Thanaraj, A. 2012. Student engagement with e-portfolios: purpose, benefits and problems. *Practitioner Research in Higher Education,* 6**,** 25-40.

Theel, R. K. & Tallerico, M. 2004. Using portfolios for teacher hiring: Insights from school principals. *Action in Teacher Education,* 26**,** 26-33.

Thomas, D. R. 2006. "A general inductive approach for analyzing qualitative evaluation data." American journal of evaluation 27(2): 237-246.

Thompson, S. & Thompson, N. 2008. *The Critically Reflective Practitioner*, Palgrave Macmillan.

Threlfall, S. J. 2014. E-journals: towards critical and independent reflective practice for students in higher education. *Reflective Practice,* 15**,** 317-332.

Tillema, H. H. 2001. Portfolios as developmental assessment tools. *International Journal of Training and Development,* 5**,** 126-135.

Timmins, F. & Dunne, P. J. 2009. An exploration of the current use and benefit of nursing student portfolios. *Nurse Education Today,* 29**,** 330-341.

Tisani, N. 2008. Challenges in producing a portfolio for assessment: in search of underpinning educational theories. *Teaching in Higher Education,* 13**,** 549-557.

Tiwari, A. & Tang, C. 2003. From process to outcome: the effect of portfolio assessment on student learning. *Nurse Education Today,* 23**,** 269-277.

Tochel, C., Haig, A., Hesketh, A., Cadzow, A., Beggs, K., Colthart, I. & Peacock, H. 2009. The effectiveness of portfolios for post-graduate assessment and education: BEME Guide No 12. *Medical teacher,* 31**,** 299-318.

Tomei, L. A. 2008. *Encyclopedia of information technology curriculum integration*, IGI Global.

Tonni, I. & Oliver, R. G. 2013. Acceptability of a reflective e-portfolio instituted in an orthodontic specialist programme: a pilot study. *European Journal of Dental Education,* 17**,** 177-184.

Tosh, D., Werdmuller, B., Chen, H. L., Light, T. P. & Haywood, J. 2006. The learning landscape: A conceptual framework for ePortfolios. *Handbook of research on ePortfolios***,** 24-32.

Tucker, P., Stronge, J. & Gareis, C. 2013. *Handbook on Teacher Portfolios for Evaluation and Professional Development*, Taylor & Francis.

Vähäsantanen, K. & Saarinen, J. 2013. The power dance in the research interview: manifesting power and powerlessness. *Qualitative Research,* 13**,** 493-510.

Van Tartwijk, J. & Driessen, E. W. 2009. Portfolios for assessment and learning: AMEE Guide no. 45. *Medical teacher,* 31**,** 790-801.

Van Wesel, M. & Prop, A. 2008. Comparing students' perceptions of paper-based and electronic portfolios. *Canadian Journal of Learning and Technology/La revue canadienne de l'apprentissage et de la technologie,* 34.

Vance, G., Williamson, A., Frearson, R., O'Connor, N., Davison, J., Steele, C. & Burford, B. 2013. Evaluation of an established learning portfolio. *The clinical teacher,* 10**,** 21-26.

Varis, P. 2016. Digital ethnography. *The Routledge handbook of language and digital communication***,** 55-68.

Vernazza, C., Durham, J., Ellis, J., Teasdale, D., Cotterill, S., Scott, L., Thomason, M., Drummond, P. & Moss, J. 2011. Introduction of an e-portfolio in clinical dentistry: staff and student views. *European Journal of Dental Education,* 15**,** 36-41.

Virkkunen, J. & Kuutti, K. 2000. Understanding organizational learning by focusing on "activity systems". *Accounting, Management and Information Technologies,* 10**,** 291-319.

Von Glasersfeld, E. 1989. Cognition, construction of knowledge, and teaching. *Synthese,* 80**,** 121-140.

Vygotsky, L. S. 1978. Mind in society: The development of higher mental process. Cambridge, MA: Harvard University Press.

Wakimoto, D. K. & Lewis, R. E. 2014. Graduate student perceptions of eportfolios: Uses for reflection, development, and assessment. *The Internet and Higher Education,* 21**,** 53-58.

Wald, H. S., Davis, S. W., Reis, S. P., Monroe, A. D. & Borkan, J. M. 2009. Reflecting on reflections: Enhancement of medical education curriculum with structured field notes and guided feedback. *Academic Medicine,* 84**,** 830-837.

Walsham, G. 1995. "Interpretive case studies in IS research: nature and method." European Journal of information systems 4(2): 74-81.

Walz, P. 2006. An overview of student ePortfolio functions. *Handbook of Research on ePortfolios***,** 194-205.

Wang, H. 2014. Learner Autonomy Based On Constructivism Learning Theory. *World Academy of Science, Engineering and Technology, International Journal of Social, Behavioral, Educational, Economic, Business and Industrial Engineering,* 8**,** 1552-1554.

Wang, S. 2007. Roles of students in electronic portfolio development. *International Journal of Technology in Teaching and Learning,* 3**,** 17-28.

Wang, V. C. X. 2014. *Handbook of Research on Scholarly Publishing and Research Methods*, IGI Global.

Wang, V. C. X. 2015. *Handbook of Research on Learning Outcomes and Opportunities in the Digital Age*, IGI Global.

Ward, C. & Moser, C. 2008. e-Portfolios as a hiring tool: Do employers really care? *Educause Quarterly,* 31**,** 13-14.

Wassef, M. E., Riza, L., Maciag, T., Worden, C. & Delaney, A. 2012. Implementing a competency-based electronic portfolio in a graduate nursing program. *CIN: Computers, Informatics, Nursing,* 30**,** 242-248.

Wear, D. 1997. Professional development of medical students: problems and promises. *Academic Medicine,* 72**,** 1056-62.

Webb, C., Endacott, R., Gray, M. A., Jasper, M. A., McMullan, M. & Scholes, J. 2003. Evaluating portfolio assessment systems: what are the appropriate criteria? *Nurse Education Today,* 23**,** 600-609.

Webb, T. P., Aprahamian, C., Weigelt, J. A. & Brasel, K. J. 2006. The Surgical Learning and Instructional Portfolio (SLIP) as a Self-Assessment Educational Tool Demonstrating Practice-Based Learning. *Current Surgery,* 63**,** 444-447.

Weber, I. & Evans, P. 2011. E= Mportfolios2?: Challenges and Opportunities in Creating Mobile Electronic Portfolio Systems for Lifelong Learning. *International Journal of Web Portals (IJWP),* 3**,** 1-13.

Weimer, M. 2002. *Learner-centered teaching: Five key changes to practice*, John Wiley & Sons.

Welsh, M. 2012. Student perceptions of using the PebblePad e-portfolio system to support self-and peer-based formative assessment. *Technology, Pedagogy and Education,* 21**,** 57-83.

Wenger, E. 1998. *Communities of practice: Learning, meaning, and identity*, Cambridge university press.

Wertsch, J. V. 1991a. A sociocultural approach to socially shared cognition. n L. Resnick, J.Levine & S. Teasley. Perspectives on Socially Shared Cognition(85 - 100). Hyattsville, MD: American Psychological Association.

Wertsch, J. V. 1991b. Voices of the mind: A sociocultural approach to mediated action, Harvard Univ Pr.

Wertsch, J. V. 1997. Vygotsky and the formation of the mind. *Cambridge, MA*.

Westbrook, L. 1994. "Qualitative research methods: A review of major stages, data analysis techniques, and quality controls." Library & Information Science Research 16(3): 241-254.

Whitcomb, M. E. 2002. Fostering and evaluating professionalism in medical education. *Academic Medicine,* 77**,** 473-474.

Whitworth, J., Deering, T., Hardy, S. & Jones, S. 2011. Perceptions regarding the efficacy and use of professional portfolios in the employment of teachers. *International journal of eportfolio,* 1**,** 95-106.

Wickersham, L. E. & Chambers, S. M. 2006. ePortfolios: Using technology to enhance and assess student learning. *Education,* 126.

Wilhelm, L., Puckett, K., Beisser, S., Wishart, W., Merideth, E. & Sivakumaran, T. 2006. Lessons learned from the implementation of electronic portfolios at three universities. *TechTrends,* 50**,** 62-71.

Williams, G. A., Park, J. R., Traynor, V., Nairn, S., O'Brien, E., Chapple, M. & Johnson, S. 2009. Lecturers' and students' perceptions of portfolios in an English School of Nursing. *Journal of Clinical Nursing,* 18**,** 1113-1122.

Williams, M. 2007. Avatar watching: participant observation in graphical online environments. *Qualitative Research,* 7**,** 5-24.

Willis, L. & Wilkie, L. 2009. Digital career portfolios: Expanding institutional opportunities. *journal of employment counseling,* 46**,** 73-81.

Wilson, V. & McCormack, B. 2006. Critical realism as emancipatory action: the case for realistic evaluation in practice development. *Nursing Philosophy,* 7**,** 45-57.

Wolcott, H. F. 1994. Transforming Qualitative Data: Description, Analysis, and Interpretation, SAGE Publications.

Wolf, K. & Dietz, M. 1998. Teaching portfolios: Purposes and possibilities. *Teacher education quarterly***,** 9-22.

Wolf, K. 1999. *Leading the professional portfolio process for change*, Skylight Professional Development.

Wong, A. & Trollope-Kumar, K. 2014. Reflections: An inquiry into medical students' professional identity formation. *Medical education,* 48**,** 489-501.

Wong, D., Clarke, S., Lodge, N. & Shephard, K. 2007. Demand-led e-learning and the elusive total solution. *British Journal of Educational Technology,* 38**,** 116-132.

Woodbury, D., Addams, L. & Neal, W. 2011. The career portfolio: a practical job search tool. *Journal of College Teaching & Learning (TLC),* 6.

World Health Organization 2004. The launch of the World Alliance for Patient Safety. *Forward programme. Geneva: WHO Library*.

Wright, S. M., Kern, D. E., Kolodner, K., Howard, D. M. & Brancati, F. L. 1998. Attributes of excellent attending-physician role models. *New England Journal of Medicine,* 339**,** 1986-1993.

Wynd, C. A. 2003. Current factors contributing to professionalism in nursing. *Journal of Professional Nursing,* 19**,** 251-261.

Yaffe, E. 2010. The reflective beginner: using theory and practice to facilitate reflection among newly qualified teachers. *Reflective Practice,* 11**,** 381-391.

Yam, S. 2010. Tutoring strategies to engage first year students in the transition to university learning: the students' perspective. Occasional Papers on Learning and Teaching at UniSA – Paper 15

Yamagata-Lynch, L. C. 2010. *Activity Systems Analysis Methods: Understanding Complex Learning Environments*, Springer US.

Yang, L. & Wilson, K. 2006. Second language classroom reading: A social constructivist approach. *Reading,* 6 (3).

Yang, L. and K. Wilson 2006. "Second language classroom reading: A social constructivist approach." Reading 6 (3).

Yastibas, A. E. & Yastibas, G. C. 2015. The Use of E-portfolio-based Assessment to Develop Students' Self-regulated Learning in English Language Teaching. *Procedia - Social and Behavioral Sciences,* 176**,** 3-13.

Yin, R. K. 2009. Case study research: Design and methods, Sage Publications, Incorporated.

Yin, R. K. 2012. *Applications of Case Study Research,* USA, SAGE Publications, Inc.

Yin, R. K. 2014. Case Study Research: Design and Methods, SAGE Publications.

Yorke, M. 2003. Formative assessment in higher education: Moves towards theory and the enhancement of pedagogic practice. *Higher Education,* 45**,** 477-501.

Young, B., Catto, G., Bowman, D. & Walsh, P. 2009. Professionalism – dilemmas and lapses. In: National Patient Safety Agency: National Clinical Assessment Service, UK NHS. Availabe at: www.ncas.nhs.uk/EasySiteWeb/GatewayLink.aspx?alId=63011 [Accessed 20 July. 2017].

Young, D. & Lipczynski, K. 2007. Transferability of e-Portfolios in Education: Phase Two Protocol. *ESCalate*.

Yu, T. 2011. E-portfolio, a valuable job search tool for college students. *Campus-Wide Information Systems,* 29**,** 70-76.

Zeichner, K. & Wray, S. 2001. The teaching portfolio in US teacher education programs: what we know and what we need to know. *Teaching and Teacher Education,* 17**,** 613-621.

Zhang, X., Olfman, L. & Firpo, D. 2010. Supporting Social Constructivist Learning through the KEEP SLS ePortfolio System. *International Journal on E-Learning,* 9**,** 411-426.

Zophy, J. W. 1982. On learner-centered teaching. *The History Teacher,* 15**,** 185-196.

Zou, M. 2003. Organizing Instructional Practice around the Assessment Portfolio: The Gains and Losses. *Professional Educator,* 26**,** 73-81.

Zubizarreta, J. 2008. The learning portfolio: A powerful idea for significant learning. *The IDEA Center (Paper No. 44)*.

Appendix A: initial and follow up interview guides

Initial interview guide for students

1. **How did you feel about the e-portfolio when it was first introduced to you?**

Prompts

- What was your first impression about the e-portfolio?
- Why did you feel this way?
- Do you still feel the same?
- If yes, what changed your mind?

2. **How have you used the e-portfolio so far? Give me examples**

Prompts

- What are the activities you have done in your e-portfolio so far?
- What kind of tools and options have you used?

3. **When you work in your e-portfolio:**
   - What is easy?
   - What is hard? Why? How do you manage these difficulties?

4. **How useful have you found the e-portfolio for your learning so far? Give me examples**

5. **What do you like/enjoy most about the e-portfolio? Why?**

6. **What do you like least (dislike) about the e-portfolio? Why?**

7. **What things motivate you to work on the e-portfolio?**
   - It is like social network/ fun
   - Personal space and privacy
   - The need to be self-directed learner
   - I need to increase self-awareness
   - Improve technological skills

8. **How does your tutor work with you in your e-portfolio? Give me examples**

Prompts

- What kind of support you have received from your tutor? Can you think of examples
- How does your tutor follow your progress in the e-portfolio? Example
- Do you think that the e-portfolio facilitate or hinder the communication with your tutor? Why and how/ give examples

9. **How do you find the support and resources available to help you learn to use e-portfolios at this stage?**

Prompts

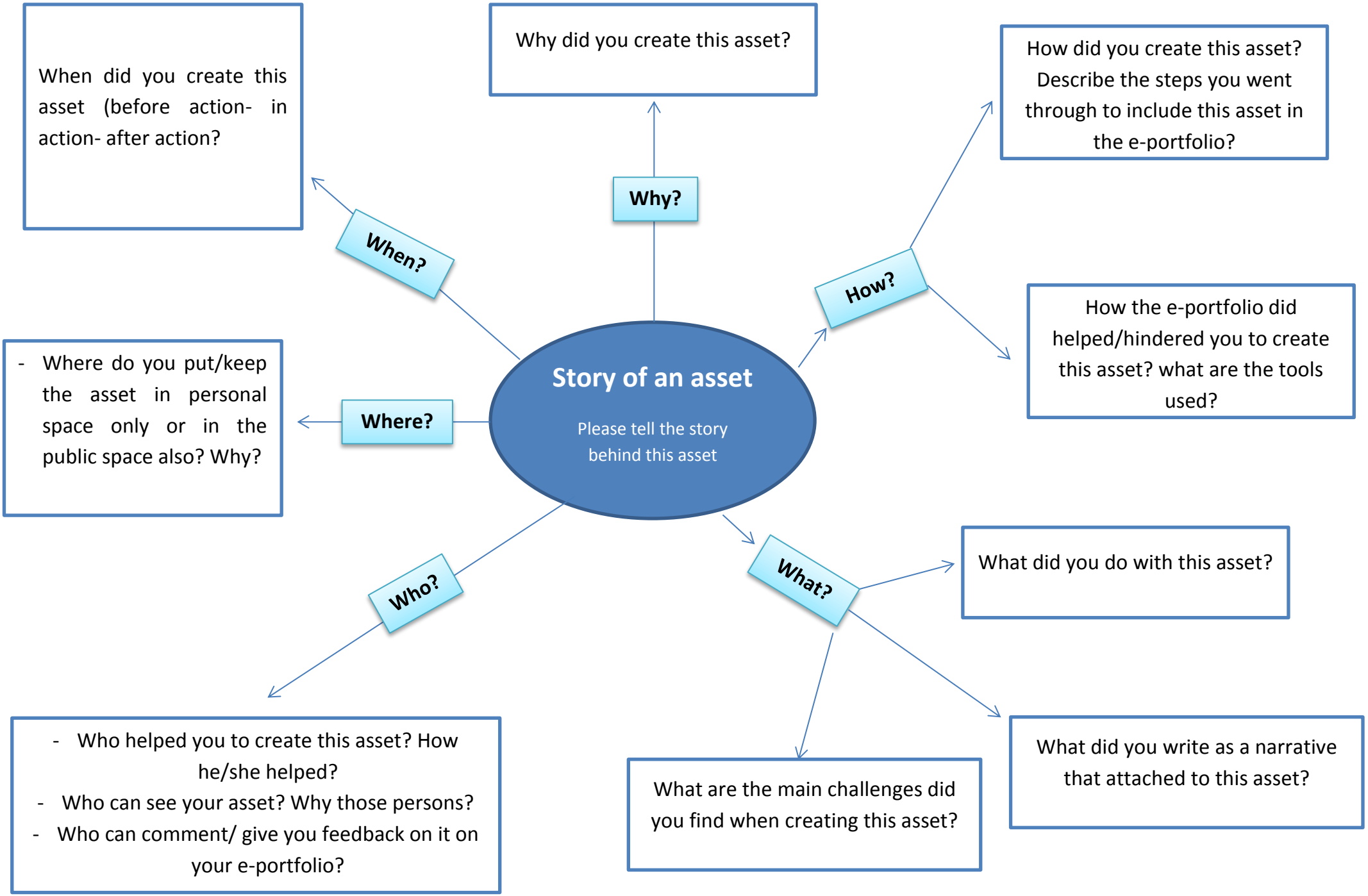
- Are they enough? Are you satisfied?
- What support/resources have helped you the most?
- What else do you need? Do you have suggestions?

10. **What kinds of assets you created in your e-portfolio? Give examples.**

Prompts

- Course related assets (give examples)
- Work related assets (give examples)
- Personal assets (give example)
- Format (documents-audios-videos)

Please select one of your assets and tell me the story of creating it and put it in your modular e-portfolio


Story of an asset
Please tell the story behind this asset
Why?
Why did you create this asset?
When?
When did you create this asset (before action- in action- after action?
How?
How did you create this asset? Describe the steps you went through to include this asset in the e-portfolio?
How the e-portfolio did helped/hindered you to create this asset? what are the tools used?
Where?
- Where do you put/keep the asset in personal space only or in the public space also? Why?
What?
What did you do with this asset?
What did you write as a narrative that attached to this asset?
What are the main challenges did you find when creating this asset?
Who?
- Who helped you to create this asset? How he/she helped?
- Who can see your asset? Why those persons?
- Who can comment/ give you feedback on it on your e-portfolio?

Follow up interview guide for students

General questions

- **How have you used PebblePad this year?**
  - Examples of the activities
  - Tools and features used
  - What did it allow you to do?
  - What did it restrict you from doing?
  - Used on placement?

- **Has your use of Pebblepad been different than last year?**

If yes,

- How?
- What caused this change?
- How did this change affect your use of pebblepad?

- **How useful have you found it?**
  - Likes and dislikes
  - Easy and difficult

- **What were the challenges/ problems**

Sharing with tutor

- **How do you share your work with your tutor in this course?**
  - Motivated
  - Tools for sharing?

- **Have you used PebblePad for sharing your work with your tutor this year?**

- **If yes, Can you describe in what ways have you used it for sharing? Has it been very different than last year? what caused this change**

  - Modular portfolio, Submitted evidence to the workspace
  - Personal academic record, Sharing elective materials on the webfolio

- **In what ways do you think Pebblpad has helped you to share your work with your tutor?**

    - Like and dislike? Why?
    - Easy/difficult to share? Why?
    - Worked well and not work well? Why? Manage?
    - Features and tools?
    - PebblePad compared to other tools?
    - Examples of how PebblePad helped you to share work?
    - Achieved desired outcomes?
    - Different than last year? If yes, what caused this change?
    - What else would you like PebblePad to have done in terms of sharing?
    - Reuse PebblePad for sharing next year?

- **What do you think restricted your use of pebblepad to share your work with your tutor? How did you overcome (get around) these restrictions?**

<u>Sharing with colleagues</u>

- **Have you used pebblepad for sharing work with your colleagues? Sharing on webfolio, group outcome?**

If yes: Motivation to share

    - type of work you share with them

If no: What stopped you from sharing work with colleagues?

Repeat the same questions (sharing with tutors' questions)

<u>Reflection</u>

- **Can you tell me how did you reflect on your learning in this course?**
    - Reflection style and preferences (structured versus freestyle)
    - Motivation to write a reflection

- **Have you used PebblePad for sharing your work with your tutor this year?**

- **If yes, in what ways do you think Pebblpad has helped you to write your reflection? Has it been very different than last year? what caused this change**

    - Like and dislike? Why?
    - Easy/difficult? Why? How did you manage difficulties?
    - Worked well and not work well? Why? Manage?
    - Features and tools?
    - Use of reflection templates? How useful? suit your reflection style?
    - Have you liked the reflection models on pebblepad? If no, why?
    - Pebblepad compared to writing reflection on paper?
    - Example of how pebblepad helped you to write reflection?
    - Achieve desired out comes from writing reflection?
    - Different than last year? If yes, what caused this change?
    - What else would you like pebblepad to have done in terms of writing reflection?
    - Reuse pebbpelpad for writing reflection next year?

- **Can you think of what restricted your use of pebblepad to share your work with your tutor? How did you overcome (get around) these restrictions?**

Evidencing learning outcomes

- **Can you tell me how did you evidence the learning outcomes in the course?**
    - motivation to evidence the learning outcomes

- **Have you used PebblePad for evidencing learning outcomes this year?**

  If yes, in what ways do you think Pebblpad has helped you to evidence learning outcomes? Has it been very different than last year? What caused this change

    - Like and dislike? Why?
    - Easy/difficult? Why? How did you manage difficulties?
    - Worked well and not work well? Why? Manage?
    - Features and tools? (rosette, tags)

- Pebblepad compared to evidencing learning outcomes on paper?
- Example of how pebblepad helped you to evidencing learning outcomes?
- Desired outcomes from evidencing learning outcomes?
- Different than last year? If yes, what caused this change?
- What else would you like pebblepad to have done in terms of evidencing learning outcomes?
- Reuse pebbpelpad for evidencing learning outcomes next year?

- **Can you think of what restricted your use of pebblepad to evidencing learning outcomes? How did you overcome (get around) these restrictions?**

<u>Storing and organizing</u>

- **Can you tell me how did you store and organize your evidence in the course?**
  - Motivation to store and organise your evidence and work
  - preference and style for storing and organizing
  - Where did you store and organize your evidence? (dropbox-stick memory)

- **Have you used PebblePad for storing and organizing your evidence this year?**
- **If yes, in what ways do you think Pebblpad has helped you to store and organize your evidence? Has it been very different than last year? what caused this change**

  - Like and dislike? Why?
  - Easy/difficult? Why? How did you manage difficulties?
  - Worked well and not work well? Why?
  - Features and tools? (tags)
  - Pebblepad compared to other spaces/drives?
  - Example of how pebblepad helped you to store and organize your evidence?
  - Achieved desired outcomes?
  - Different than last year? If yes, what caused this change?
  - What else would you like pebblepad to have done in terms of storing and organizing your evidence?

- Reuse pebbpelpad for storing and organizing your evidence next year?

- **Can you think of what restricted your use of pebblepad to evidencing learning outcomes? How did you overcome (get around) these restrictions?**

Have you used PebblePad for anything other than you would directed to? Have you done anything else with it?

- Adding additional things they weren't asked to do
- Extra curriculum activities such as hobbies.

Initial interview guide for tutors

1. **How you were introduced to the e-portfolio system by the school?**

2. **Why do you think the school introduced the e-portfolio for students?**

3. **How did you feel about the e-portfolio when it was first introduced to you?**

Prompts

- What was your first impression about the e-portfolio?
- Why did you feel this way?
- Do you still feel the same?
- If yes, what changed your mind?

4. **How have you used the e-portfolio with your students so far? Give me examples**

Prompts

- What are the activities you have done with the students in your e-portfolio so far?
- What kind of tools and options have you used?

5. **How useful have you found the e-portfolio so far? Example?**

6. **What do you think the added value of the e-portfolio over the paper based?**

7. **How do you motivates and support your students to use the portfolio?**

Prompts

- How have the students accepted/adapted to using the ePortfolio?
- What kind of support you have given to your students? Can you think of examples

- How do you follow your students' progress in the e-portfolio? Example
- Do you think that the e-portfolio facilitate or hinder the communication with your students? Why and how/ give examples
-

8. What do you like/enjoy most about the e-portfolio? Why?

9. What do you like least (dislike) about the e-portfolio? Why?

10. When you use the e-portfolio with your students:

- What is easy?
- What is hard? Why? How do you manage these difficulties?
- What challenges or problems have you encountered in helping your students develop their e-portfolio?

11. How do you find the support and resources available to help you to use e-portfolios with your students at this stage?

Prompts

- Are they enough? Are you satisfied?
- Was there any aspect that you felt was missing from your training?
- What support/resources have helped you the most?
- What else do you need? Do you have suggestions?

12. Did the students share assets with you?

13. What kinds of assets students share with you in the e-portfolio? (Completed assets, assets that need revision, nonacademic assets)? Give examples.

14. What did you do then with these assets? How do you respond to them?

Follow up interview guide for tutors

General questions

- **Can you tell me how have used pebblepad with your tutees/facilitated group over the last year after the initial interview?**

- **How have you found using Pebblepad this year? Has it been different than last year?**
    - What did you find useful?
    - What worked well
    - What didn't work so well?

- **What is your overall impression of Pebblepad this year? Has it been different than last year?**

- **How has pebblepad supported your tutees in their learning this year? Can you give me an example?**

- **How have you supported your students to use pebblePad? What are your responsibilities regarding using Pebblepad with your students?**

- **Can you describe any challenges you encountered in working with students on their pebblepad?**

Sharing

- Did the students share their work with you?
- Have they shared any work with you on Pebblepad?
    - If yes, how have your responded? Did you give them feedback?
    - If no, why?
- What did they share with you?
- How did they share work with you? Share by your name or submit to the workspace?

Reflection

- Can you tell me, how have your students written reflection?

- Have they used pebblepad to write their reflection?
    - If no, why?
    - If yes:
        - How?
        - How have you supported them to use pebblepad to write their reflection

Evidence learning outcomes

- Can you tell me, how have your students shown you the achievement of the learning outcomes?
- Have your tutees used pebblepad to evidence learning outcomes? How have they used it to do that?
- How have you supported your tutees in evidencing the learning outcomes on pebblepad?
- What type of evidence the students were using to evidence the learning outcomes?
- How have you monitored your students' evidencing the learning outcomes?

Storing evidence on PebblePad

- What type of evidence the students were required to upload to pebblepad?
    - Evidence from Uni
    - Evidence from placement

- Where should the students collect and store their evidence from Uni and from placement?
- Are the students required to organize their evidence on pebblepad in certain way?
- How the students are organizing their work on pebblepad? Do they use tags?
- How have you helped the students to organize their work on pebblepad?

- **How has Pebblepad influenced the communication between you and your tutees/facilitated group?**

Follow up interview guide for curriculum planners and module leads

Tell me how PebblePad has been used on your aspect of the programme/the parts of the programme you are involved in.

What are students using the e-portfolio for?

- *Outcomes (what sorts of things do they do here – eg storing, reflecting sharing etc)*
- *Assignments (what sorts of things do they do here – eg storing, reflecting sharing etc)*
- *Elective (what sorts of things do they do here – eg storing, reflecting sharing etc)*
- *PAR/extensions (what sorts of things do they do here – eg storing, reflecting sharing etc)*

How have the use of pebblepad (above functions/formats) evolved over the two years of the programme

What do you see as the key advantages to using an e-portfolio system?

What are the challenges of using pebblepad that were reported by students and tutors?

What are the challenges you face in integrating the e-portfolio in the course?

How did you respond to these challenges? What are the changes that have been taking place in using pebbepad to overcome these challenges?

How useful have the tutors and students found these changes?

To what extent do you think the students have used pebblepad the way it was supposed to be?

How well equipped do you think tutors feel to support students' use of e-portfolio.

- What has been done to help them in this task? If none, what could be done to help?

Follow up interview guide for Curriculum planners

The purpose of the curriculum planners/ module leads:

- Identify the challenges in using the e-portfolio
- How did they overcome changes
- What are the outcomes of the changes

General questions

What are the challenges of using pebblepad that were reported by students and tutors?

What are the challenges you face in integrating the e-portfolio in the course?

How did you respond to these challenges? What are the changes that have been taking place in using pebbepad to overcome these challenges? What derived that change?

How useful have the tutors and students found these changes?

What are the activities that the students have been using pebblepad for? Has it been different than last year?

To what extent do you think the students have used pebblepad the way it was supposed to be?

How were the tutors and facilitator supposed to support the students on pebbepad?

Evidencing earning outcomes

Were the students supposed to evidence learning outcome? How?

Were the students required to use pebblepad to evidence learning outcomes?

If yes:

How pebblepad was supposed to help the students to evidence learning outcomes? Has that been different than last year?

How were the tutors and facilitator supposed to support the students to avidence learning outcomes on pebblepad

How pebblepad was integrated in the course to help student demonstrate achievement of learning outcomes?

If not:

How were the students supposed to show demonstrating the achievement of learning outcomes?

Reflecting on experience

Were the students supposed to reflect on their experience? How?

Were the students required to use pebblepad to write their reflection on experience?

If yes:

How pebblepad was supposed to help the students to reflect on their experience? Has that been different than last year?

How were the tutors and facilitator supposed to support the students to refecty on their experience on pebblepad?

If not:

How were the students supposed to reflect on their experience?

Sharing work with tutors and other students?

Were the students supposed to share their work with tutors and facilitators? With other students? How?

Were the students required to use pebblepad to share their work with their tutors and facilitators? With other students?

If yes:

How pebblepad was supposed to help the students to share work with their tutors and facilitators? With other students?

How were the tutors and facilitator supposed to support the students to share their work on pebblepad?

If not:

How were the students supposed to share their work with their tutors and facilitators? With other students?

Storing and organizing work

Were the students supposed to collect and store their work? How?

Were the students required to use pebblepad to store and organize their work?

If yes:

How pebblepad was supposed to help the students to store and organize their work? Has that been different than last year?

How were the tutors and facilitator supposed to support the students to store and organize their work on pebblepad?

If not:

How were the students supposed to store and organize their work?

Appendix B1: information sheets

Students Information Sheet

Title of Study: The Pedagogical Value of e-portfolios "PebblePad" for Nursing Students: Activity Theory Perspective

Name of Researcher(s): Professor Heather Wharrad

Dr Richard Windle

Eman Ghallab

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

What is the purpose of the study?

This study is being conducted as a fulfilment of the PhD of one of Eman Ghallab. The main purpose of this research is to explore the educational value of e-portfolios "PebblePad" for nursing students and to understand how the challenges and tension in the learning context may influence the efficacy of e-portfolio as a learning tool for nursing student.

Why have I been invited?

You are being invited to take part because you are using e-portfolio "PebblePad" to document your learning and achievement and we want to include the perspectives of nursing students regarding the educational benefits of e-portfolios and we also want to understand how you use e-portfolio and how you learning is supported by your teaching staff. We are inviting up to 20 students like you to take part

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This would not affect your legal rights.

What will happen to me if I take part?

The study involves two interviews, virtual observation of your public workspace and analysis of your e-portfolio content such as the feedback you received and your written reflection. If you consent to take part in this study, you will be invited to attend two face to face interviews, one at the beginning of the academic year and one at the end. Each interview will take up to one hour of your time at a time and location convenient to you. The focus of the interview will be on your experiences and thoughts regarding the educational value of e-portfolios from your perspective and based on your experience. The interview will be audio-recorded for the purpose of analysis.

Also, if you decided to participate and give me a permission to access your public workspace in your e-portfolio, your online learning activities will be observed virtually by the researcher. The observation will be conducted over two semesters. The purpose of this observation is to understand how you are using your e-portfolio and how your learning is supported by your teaching staff using e-portfolios. Notes will be taken by the researcher as she observes your online learning activities.

The study also involves, analysis of your self-reflection and the feedback you received from your teaching staff through using e-portfolio in terms of depth and quality. The purpose of this analysis is to understand how the use of e-portfolios influences the quality and depth of the self- reflection and the feedback.

The data from the interviews, the virtual observation, and the e-portfolios analysis will be stored in a secure place and only the chief investigator and the co investigators will have access to them. Your identity will not be identified by name or any other personal specific details.

Expenses and payments

Participants will not be paid to participate in the study.

What are the possible disadvantages and risks of taking part?

We do not anticipate any disadvantages or risk involved in taking part in the study. Taking part in the research will involve you spending approximately an hour in face to face interview. You will be free to end the interview at any time. Every effort will be made to ensure that you are not inconvenienced in any way.

What are the possible benefits of taking part?

The study may help in understanding the underpinning educational value of e-portfolios "Pebblepad" for nursing students and how the educational value of e-portfolios might be influenced by the challenges and tensions within the learning context in which the e-portfolio is situated. Your views and recommendations can inform the improvements for how you and future nursing students use Pebblepad in the course.

The information gained from this research will be used to make recommendations for the academic, clinical and administrative staff on the best practice of effective utilization of the maximum educational benefits of e-portfolios to support and enhance the academic and clinical learning experience of nursing students and also inform the policy and rules for implementing the e-portfolio. The results of the study may also serve as a basis for other future research on the same topic.

By becoming a research participant in this study you will receive A **CERTIFICATE** of research participation which you can put in your CV and your e-portfolio

What if there is a problem?

If you have a concern about any aspect of this study, you can speak to me or/and my supervisors and we will do our best to answer your questions. Our

contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this by contacting the school's research director or the head of the school. Details can be obtained from your school.

Will my taking part in the study be kept confidential?

We will follow ethical and legal practice and all information about you will be handled in confidence.

If you join the study, some parts of the data collected for the study will be looked at by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database. Any information about you will have your name and address removed (anonymised) and a unique code will be used so that you cannot be recognised from it.

Your personal data (address, telephone number) will be kept for 12 months after the end of the study so that we are able to contact you about the findings of the study and possible follow-up studies (unless you advise us that you do not wish to be contacted). All research data will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

Although what you say in the interview is confidential, should you disclose anything to us which we feel puts you at any risk, we may feel it necessary to report this to the appropriate persons.

What will happen if I don't want to carry on with the study?

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights being affected. If you

withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis.

What will happen to the results of the research study?

The research is being carried out as a part a fulfilment of the PhD degree for Eman Ghallab at the school of Nursing, Midwifery, and Physiotherapy at the University of Nottingham. It is planned that the results of this study will be published in a professionally peer reviewed and highly ranked research journals. You can get copy of these publications from the researchers. Moreover, it is planned that the research findings will be disseminated in the form of oral presentations in conferences, research seminars and workshops. We assure you that your identity will not be identified in any report/publication.

Who is organising and funding the research?

This research is being organised by the University of Nottingham and is being self-funded by the researcher

Who has reviewed the study?

All research in the school is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by Medical School Research Ethics Committee.

Further information and contact details

Chief investigator:

Dr Heather Wharrad
Professor of e-learning and Health informatics
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B52
Queen's Medical Centre
Nottingham
NG7 2UH
Phone: 0115 82 30909
Fax: 0115 9 709 955
Email: heather.wharrad@nottingham.ac.uk

Co-investigators:

Dr Richard Windle
Senior Lecturer in e-learning
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B53a
Queen's Medical Centre
Nottingham
NG7 2UH
Phone: 01158230866
Fax: 0115 9 709 955
Email: richard.windle@nottingham.ac.uk

Eman Ghallab
PhD student in nursing studies
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B33
Queen’s Medical Centre,
Nottingham,
NG7 2HA
Phone: 0115-8230491
Fax : 0115-8231211
Email:ntxezg@nottingham.ac.uk

Tutors Information Sheet

Title of Study: The Pedagogical Value of e-portfolios for Nursing Students: Activity Theory Perspective

Name of Researcher(s): Professor Heather Wharrad

Dr Richard Windle

Eman Ghallab

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

What is the purpose of the study?

This study is being conducted as a fulfilment of the PhD of one of Eman Ghallab. The main purpose of this research is to explore the educational value of e-portfolios for nursing students and to understand how the challenges and tension in the learning context may influence the efficacy of e-portfolio as a learning tool for nursing student.

Why have I been invited?

You are being invited to take part because you are involved in use of an e-portfolio with your nursing students and we want to include the perspectives of tutors/mentors regarding the educational benefits of e-portfolios and we also want to understand how you use e-portfolio to support the learning of your students. We are inviting up to 10 tutors and 10 mentors like you to take part

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This would not affect your legal rights.

What will happen to me if I take part?

If you consent to take part in this study, you will be invited to attend two face to face interviews, one at the beginning of the academic year and one at the end. Each interview will take up to one hour of your time at a time and location convenient to you. The focus of the interview will be on your experiences and thoughts regarding the educational value of e-portfolios from your perspective and based on your experience. The interview will be audio-recorded for the purpose of analysis.

Expenses and payments

Participants will not be paid to participate in the study. Travel expenses will be offered for any visits incurred as a result of participation.

What are the possible disadvantages and risks of taking part?

We do not anticipate any disadvantages or risk involved in taking part in the study. Taking part in the research will involve you spending approximately an hour in face to face interview. You will be free to end the interview at any time. Every effort will be made to ensure that you are not inconvenienced in any way.

What are the possible benefits of taking part?

We cannot promise the study will help you but the information we get from this study may help us to address any queries you have about using the e-portfolio. Also, it may help in understanding the underpinning educational value of e-portfolios for nursing students and how the educational value of e-portfolios might be influenced by the challenges and tensions within the learning context in which the e-portfolio is situated.

The information gained from this research will be used to make recommendations for the academic, clinical and administrative staff on the best practice of effective utilization of the maximum educational benefits of e-portfolios to support and enhance the academic and clinical learning experience of nursing students and also inform the policy and rules for

implementing the e-portfolio. The results of the study may also serve as a basis for other future research on the same topic.

What if there is a problem?

If you have a concern about any aspect of this study, you can speak to me or/and my supervisors and we will do our best to answer your questions. Our contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this by contacting the school's research director or the head of the school. Details can be obtained from your school.

Will my taking part in the study be kept confidential?

We will follow ethical and legal practice and all information about you will be handled in confidence.

If you join the study, some parts of the data collected for the study will be looked at by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database. Any information about you will have your name and address removed (anonymised) and a unique code will be used so that you cannot be recognised from it.

Your personal data (address, telephone number) will be kept for 12 months after the end of the study so that we are able to contact you about the findings of the study and possible follow-up studies (unless you advise us that you do not wish to be contacted). All research data will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

Although what you say in the interview is confidential, should you disclose anything to us which we feel puts you at any risk, we may feel it necessary to report this to the appropriate persons.

What will happen if I don't want to carry on with the study?

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights being affected. If you withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis.

What will happen to the results of the research study?

The research is being carried out as a part a fulfilment of the PhD degree for Eman Ghallab at the school of Nursing, Midwifery, and Physiotherapy at the University of Nottingham. It is planned that the results of this study will be published in a professionally peer reviewed and highly ranked research journals. You can get copy of these publications from the researchers. Moreover, it is planned that the research findings will be disseminated in the form of oral presentations in conferences, research seminars and workshops. We assure you that your identity will not be identified in any report/publication.

Who is organising and funding the research?

This research is being organised by the University of Nottingham and is being self-funded by the researcher

Who has reviewed the study?

All research in the school is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by Medical School Research Ethics Committee.

Further information and contact details:

Chief investigator:

Dr Heather Wharrad
Professor of e-learning and Health informatics
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B52
Queen's Medical Centre
Nottingham
NG7 2UH
Phone: 0115 82 30909
Fax: 0115 9 709 955
Email: heather.wharrad@nottingham.ac.uk

Co-investigators:

Dr Richard Windle
Senior Lecturer in e-learning
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B53a
Queen's Medical Centre
Nottingham
NG7 2UH
Phone: 01158230866
Fax: 0115 9 709 955
Email: richard.windle@nottingham.ac.uk

Eman Ghallab
PhD student in nursing studies
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B33
Queen’s Medical Centre,
Nottingham,
NG7 2HA
Phone: 0115-8230491
Fax : 0115-8231211
Email:ntxezg@nottingham.ac.uk

Curriculum planners Information Sheet

Title of Study: The Pedagogical Value of e-portfolios for Nursing Students: Activity Theory Perspective

Name of Researcher(s): Professor Heather Wharrad

Dr Richard Windle

Eman Ghallab

We would like to invite you to take part in our research study. Before you decide we would like you to understand why the research is being done and what it would involve for you. One of our team will go through the information sheet with you and answer any questions you have. Talk to others about the study if you wish. Ask us if there is anything that is not clear.

What is the purpose of the study?

This study is being conducted as a fulfilment of the PhD of one of Eman Ghallab. The main purpose of this research is to explore the educational value of e-portfolios for nursing students and to understand how the challenges and tension in the learning context may influence the efficacy of e-portfolio as a learning tool for nursing student.

Why have I been invited?

You are being invited to take part because you are involved in the planning and introduction of e-portfolios to nursing students in the school of Nursing and we want to include the perspectives of curriculum planners regarding the educational value of e-portfolios for nursing students and how does the school support the students, tutors, and mentors in using the e-portfolio as a learning tool. We are inviting up to 3 curriculum planners like you to take part

Do I have to take part?

It is up to you to decide whether or not to take part. If you do decide to take part you will be given this information sheet to keep and be asked to sign a consent form. If you decide to take part you are still free to withdraw at any time and without giving a reason. This would not affect your legal rights.

What will happen to me if I take part?

If you consent to take part in this study, you will be invited to attend a face to face interview which will take up to one hour of your time at a time and location convenient to you. The focus of the interview will be on your experiences and thoughts regarding the educational value of e-portfolios from your perspective and based on your experience. The interview will be audio-recorded for the purpose of analysis.

Expenses and payments

Participants will not be paid to participate in the study. Travel expenses will be offered for any visits incurred as a result of participation.

What are the possible disadvantages and risks of taking part?

We do not anticipate any disadvantages or risk involved in taking part in the study. Taking part in the research will involve you spending approximately an hour in face to face interview. You will be free to end the interview at any time. Every effort will be made to ensure that you are not inconvenienced in any way.

What are the possible benefits of taking part?

We cannot promise the study will help you but the information we get from this study may help us to address any queries you have about using the e-portfolio. Also, it may help in understanding the underpinning educational value of e-portfolios for nursing students and how the educational value of e-portfolios might be influenced by the challenges and tensions within the learning context in which the e-portfolio is situated.

The information gained from this research will be used to make recommendations for the academic, clinical and administrative staff on the best practice of effective utilization of the maximum educational benefits of e-portfolios to support and enhance the academic and clinical learning experience of nursing students and also inform the policy and rules for implementing the e-portfolio. The results of the study may also serve as a basis for other future research on the same topic.

What if there is a problem?

If you have a concern about any aspect of this study, you can speak to me or/and my supervisors and we will do our best to answer your questions. Our contact details are given at the end of this information sheet. If you remain unhappy and wish to complain formally, you can do this by contacting the school's research director or the head of the school. Details can be obtained from your school.

Will my taking part in the study be kept confidential?

We will follow ethical and legal practice and all information about you will be handled in confidence.

If you join the study, some parts of the data collected for the study will be looked at by authorised persons from the University of Nottingham who are organising the research. They may also be looked at by authorised people to check that the study is being carried out correctly. All will have a duty of confidentiality to you as a research participant and we will do our best to meet this duty.

All information which is collected about you during the course of the research will be kept **strictly confidential**, stored in a secure and locked office, and on a password protected database. Any information about you will have your name and address removed (anonymised) and a unique code will be used so that you cannot be recognised from it.

Your personal data (address, telephone number) will be kept for 12 months after the end of the study so that we are able to contact you about the findings of the study and possible follow-up studies (unless you advise us that you do not wish to be contacted). All research data will be kept securely for 7 years. After this time your data will be disposed of securely. During this time all precautions will be taken by all those involved to maintain your confidentiality, only members of the research team will have access to your personal data.

Although what you say in the interview is confidential, should you disclose anything to us which we feel puts you at any risk, we may feel it necessary to report this to the appropriate persons.

What will happen if I don't want to carry on with the study?

Your participation is voluntary and you are free to withdraw at any time, without giving any reason, and without your legal rights being affected. If you withdraw then the information collected so far cannot be erased and this information may still be used in the project analysis.

What will happen to the results of the research study?

The research is being carried out as a part a fulfilment of the PhD degree for Eman Ghallab at the school of Nursing, Midwifery, and Physiotherapy at the University of Nottingham. It is planned that the results of this study will be published in a professionally peer reviewed and highly ranked research journals. You can get copy of these publications from the researchers. Moreover, it is planned that the research findings will be disseminated in the form of oral presentations in conferences, research seminars and workshops. We assure you that your identity will not be identified in any report/publication.

Who is organising and funding the research?

This research is being organised by the University of Nottingham and is being self-funded by the researcher

Who has reviewed the study?

All research in the school is looked at by independent group of people, called a Research Ethics Committee, to protect your interests. This study has been reviewed and given favourable opinion by Medical School Research Ethics Committee.

Further information and contact details

Chief investigator:

Dr Heather Wharrad
Professor of e-learning and Health informatics
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B52
Queen's Medical Centre
Nottingham
NG7 2UH
Phone: 0115 82 30909
Fax: 0115 9 709 955
Email: heather.wharrad@nottingham.ac.uk

Co-investigators:

Dr Richard Windle
Senior Lecturer in e-learning
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B53a
Queen's Medical Centre
Nottingham
NG7 2UH
Phone: 01158230866
Fax: 0115 9 709 955
Email: richard.windle@nottingham.ac.uk

Eman Ghallab
PhD student in nursing studies
School of Nursing, Midwifery and Physiotherapy, University of Nottingham
Room B33
Queen’s Medical Centre
Nottingham,
NG7 2HA
Phone: 0115-8230491
Fax : 0115-8231211
Email:ntxezg@nottingham.ac.uk

Appendix B2: The consent form

CONSENT FORM

Title of Study: The Pedagogical Value of e-portfolios for Nursing Students: Activity Theory Perspective

REC ref: ***(to be added after approval given)***

Name of Researchers: Professor Heather Wharrad

Dr Richard Windle

Eman Ghallab

Name of Participant: **Please initial box**

1. I confirm that I have read and understand the information sheet for the above study and have had the opportunity to ask questions. ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, and without my medical care or legal rights being affected. I understand that should I withdraw then the information collected so far cannot be erased and that this information may still be used in the project analysis. ☐

3. I understand that relevant sections of my medical notes and data collected in the study may be looked at by authorised individuals from the University of Nottingham, the research group and regulatory authorities where it is relevant to my taking part in this study. I give permission for these individuals to have access to these records and to collect, store, analyse and publish information obtained from my participation in this study. I understand that my personal details will be kept confidential. ☐

4. I understand that the interview/focus group* will be recorded and that anonymous direct quotes from the interview/focus group* (*delete as appropriate) may be used in the study reports. ☐

5. I agree to take part in the above study. ☐

Name of Participant	Date	Signature
_____	_____	_____
Name of Person taking consent	**Date**	**Signature**
_____	_____	_____

3 copies: 1 for participant, 1 for the project notes and 1 for the medical notes

Appendix C: Demographic questionnaires

School of Nursing, Midwifery and Physiotherapy
University of Nottingham
Queen's Medical Centre
Nottingham
NG7 2UH

Back ground information Questionnaire

Instructions: Please read the questions and the box next to your answer

Section A

Gender:

☐Male ☐ Female

Age:

☐Under 21 ☐ 21-25 ☐ 26-30 ☐ Above 30

Ethnicity:

☐ White ☐ Black or black British ☐ Asian or Asian British

☐ Mixed ☐ Others ☐ Prefer not to respond

Section B

Highest current qualification:

☐ AS/A levels (GCE/VCE)

☐ Access to HE Diplomas

☐ Advanced Diploma

☐ BTEC National Certificate/Diploma

☐ BTEC Higher National Certificate/Diploma

☐ International Baccalaureate Diploma

☐ Other qualifications, please specify ……..

Mode of study:

☐ Full time ☐ Part time

Current path:

☐ Bsc ☐ Msc

Field name

☐ Adult

☐ Child

☐ Mental health

☐ Learning disability

Name of module or programme where the e-Portfolio is being used

……..

Do you have any disability that affects your learning e.g dyslexia, visual or hearing problems, other?

☐ Yes ☐ No

If yes, please specify……..

<u>Section C</u>

How Would You Rate Your Computer Skill Level?

☐ Low

☐ Average

☐ Above Average

☐ High

☐ Computer Expert (IT professional, etc.)

Do you have previous experience with e-portfolio or paper based portfolio?

☐ Yes ☐ No

Have you attended the training session about how to use the e-portfolio (PebblePad)?

☐ Yes ☐ No

Thank you for completing the questionnaire

Back ground information Questionnaire

Instructions: Please read the questions and tick (✓) in the box next to your answer

Section A

Name:

Gender:

☐ Male ☐ Female

Field experience:

☐ Adult

☐ child

☐ Mental health

Name of module or programme where the e-Portfolio is being used

……..

Years of experience: ……

Section C

How Would You Rate Your Computer Skill Level?

☐ Low

☐ Average

☐ Above Average

☐ High

☐ Computer Expert (IT professional, etc.)

Do you have previous experience with e-portfolio?

☐ Yes ☐ No

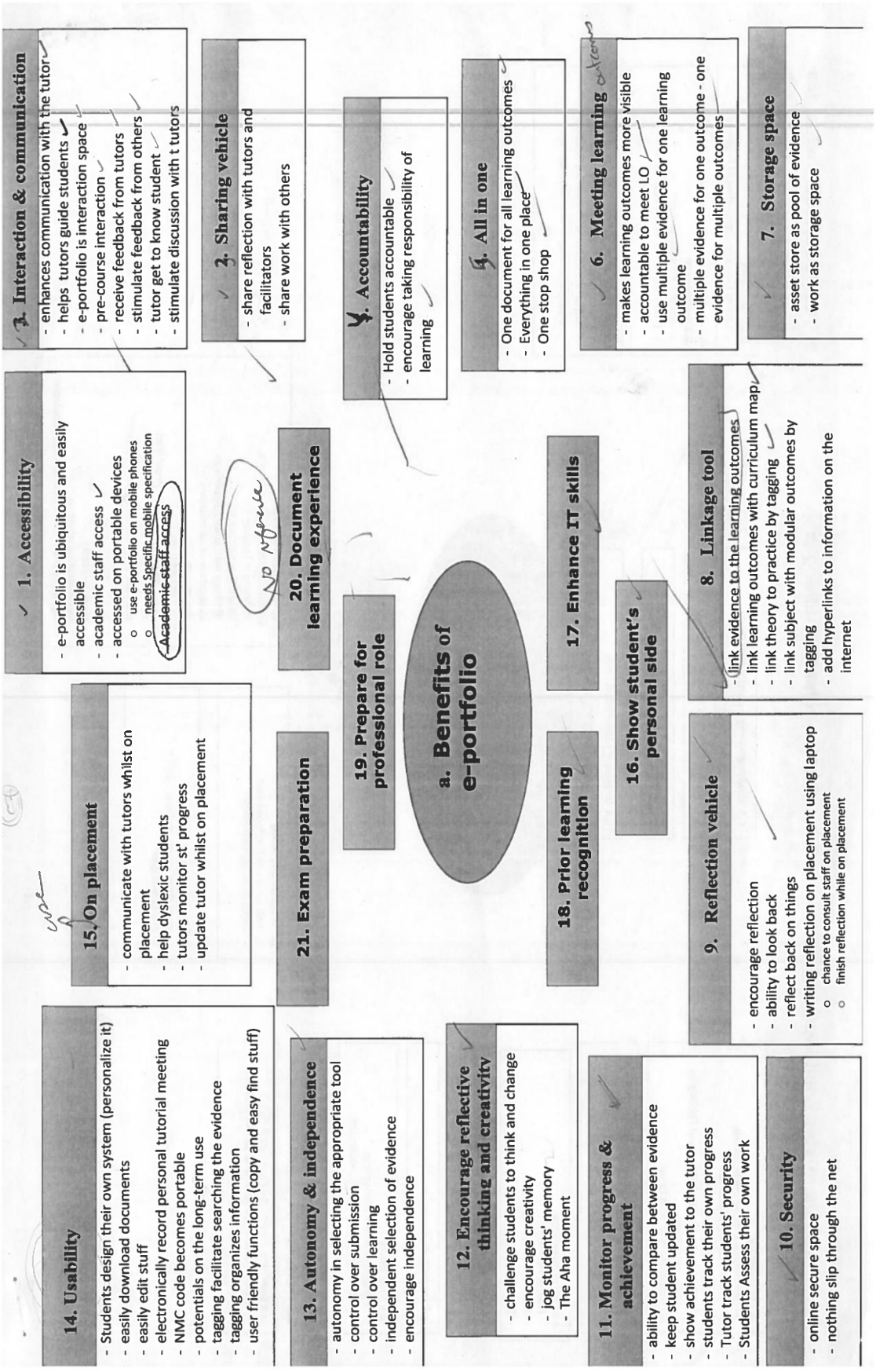
If yes, specify the name of software or program used and for how long have you used

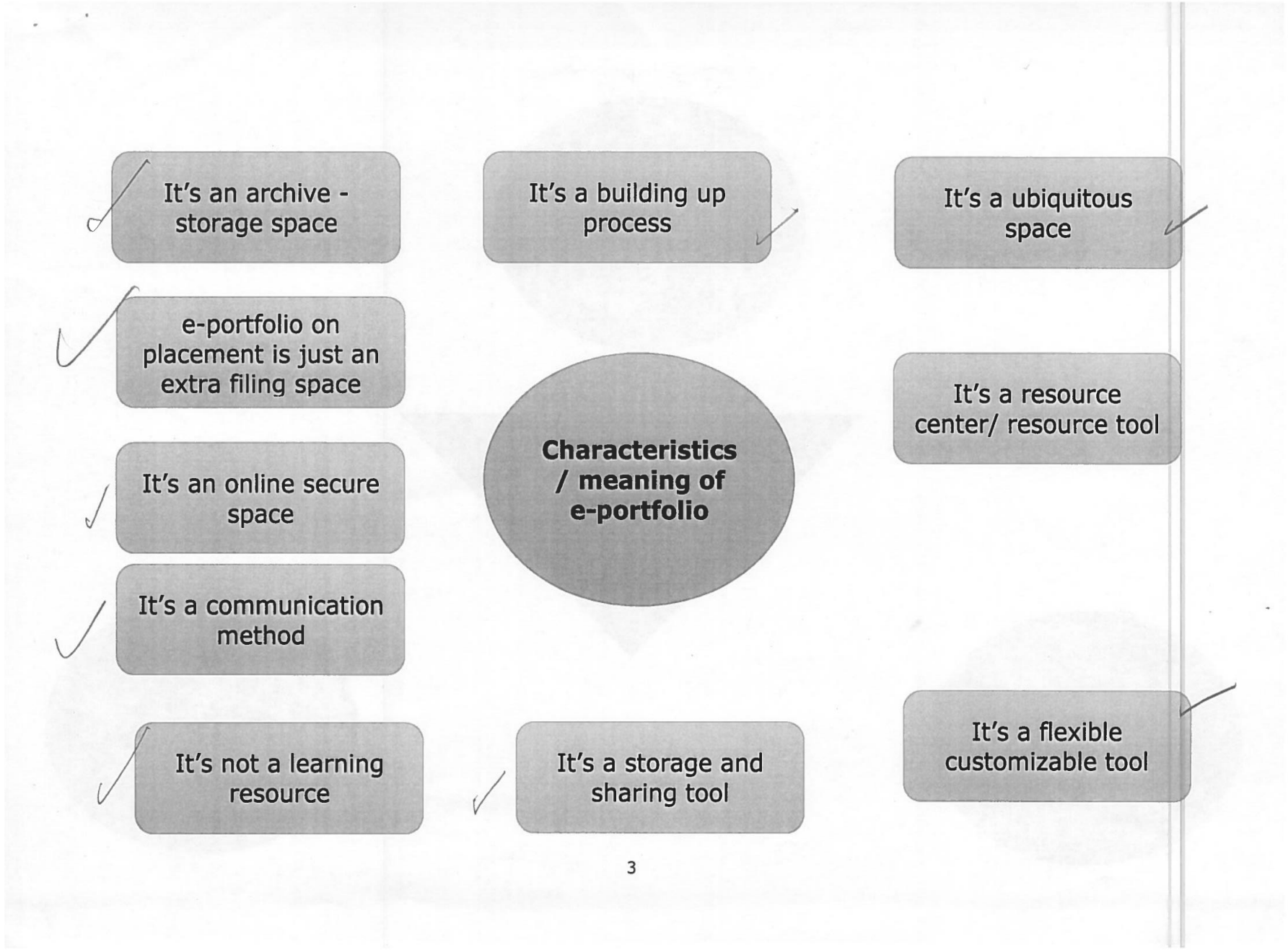
…….

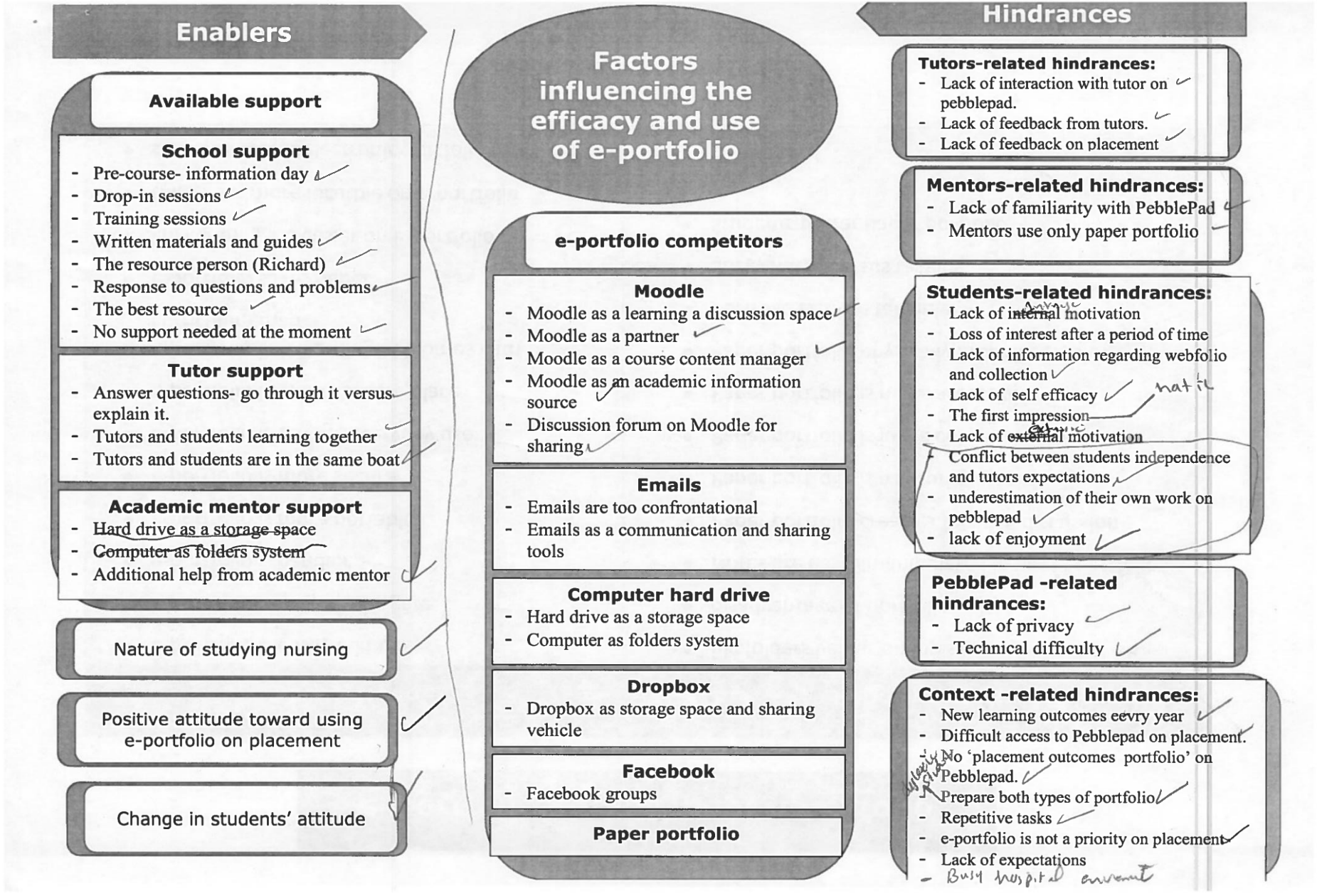
Have you attended the training session about how to use the e-portfolio (PebblePad)?

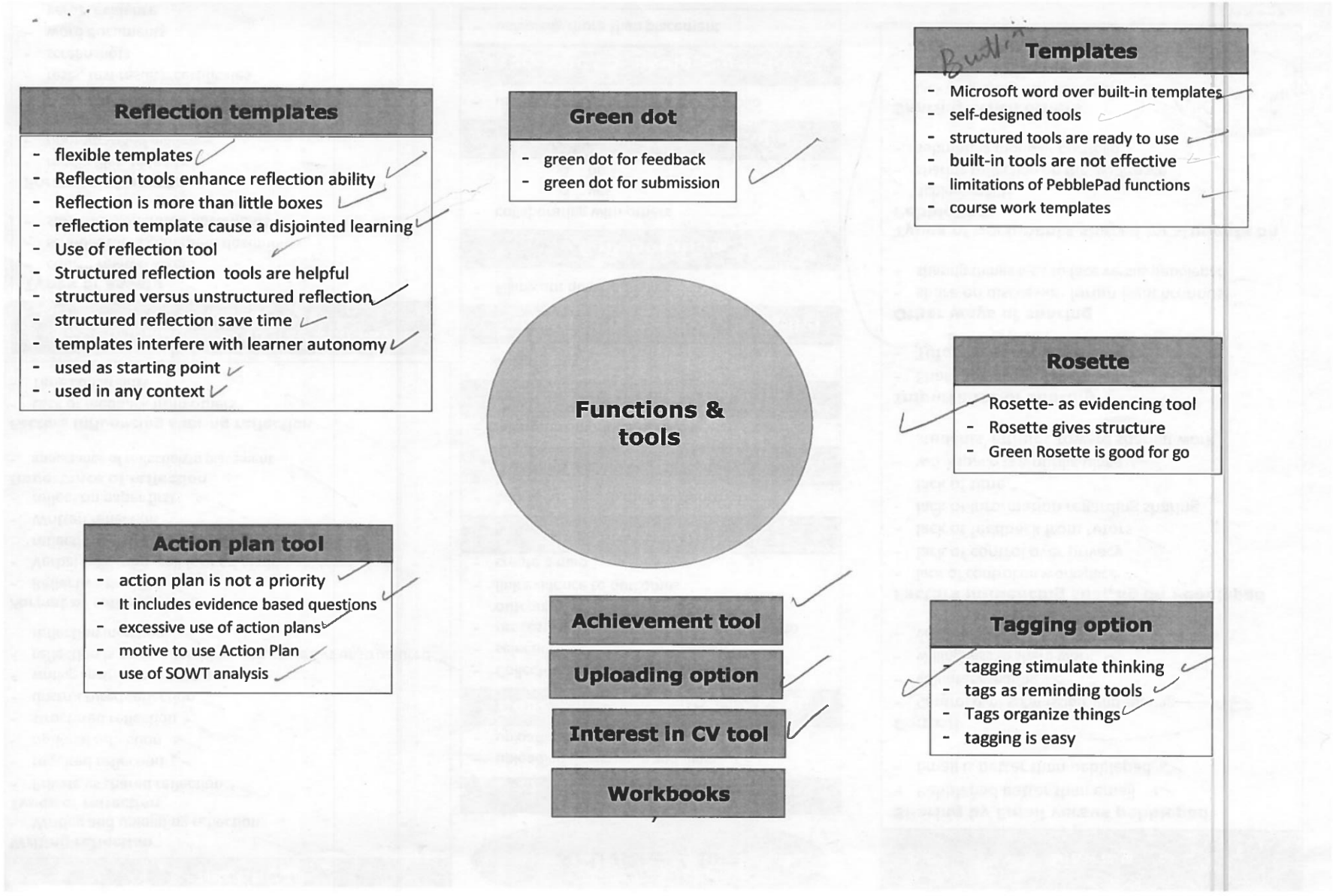
☐ Yes ☐ No

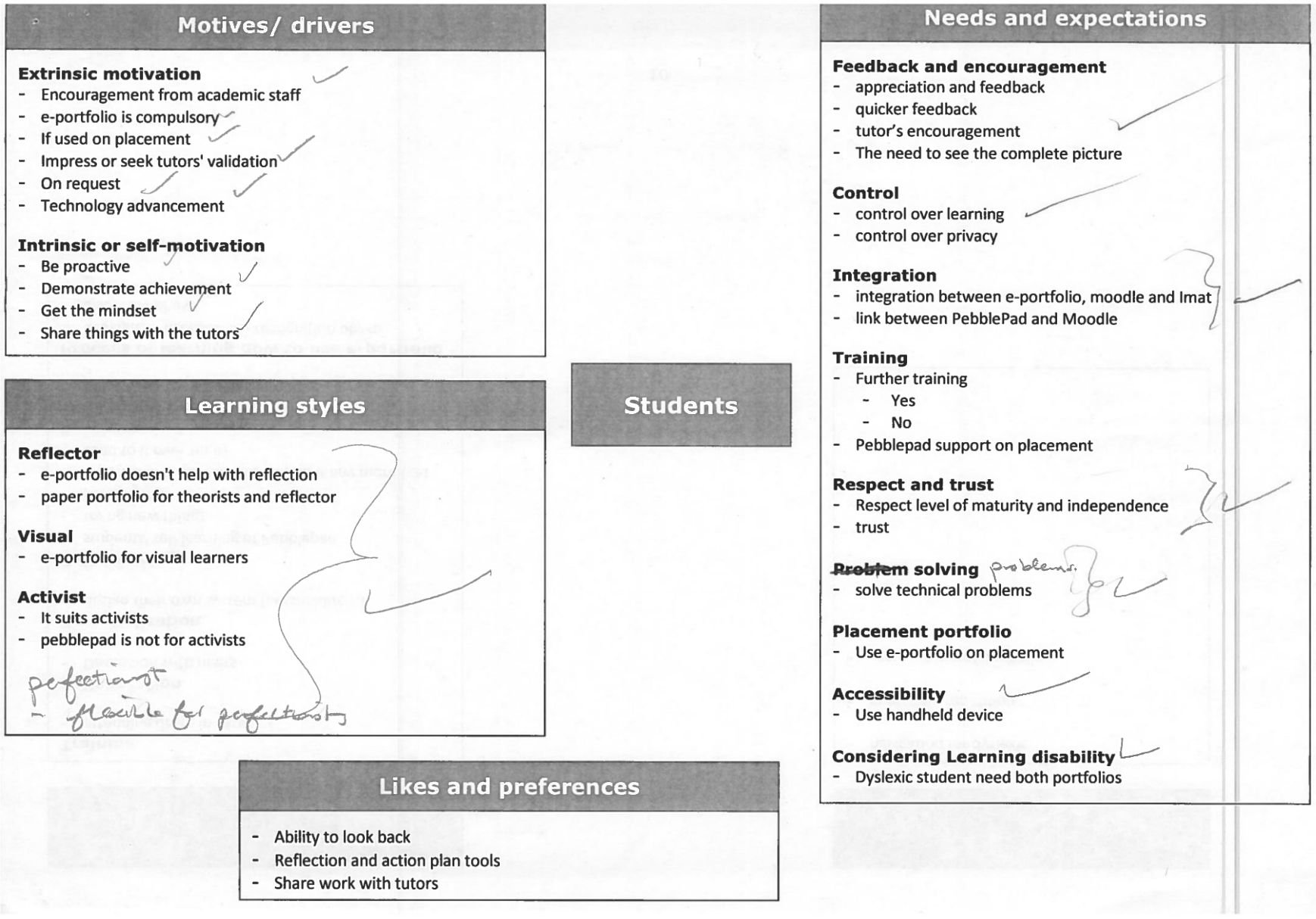
Appendix D: Initial codes clustering




It's an archive - storage space
It's a building up process
It's a ubiquitous space
e-portfolio on placement is just an extra filing space
Characteristics / meaning of e-portfolio
It's a resource center/ resource tool
It's an online secure space
It's a communication method
It's not a learning resource
It's a storage and sharing tool
It's a flexible customizable tool


Enablers
Available support
School support
- Pre-course- information day
- Drop-in sessions
- Training sessions
- Written materials and guides
- The resource person (Richard)
- Response to questions and problems
- The best resource
- No support needed at the moment
Tutor support
- Answer questions- go through it versus explain it.
- Tutors and students learning together
- Tutors and students are in the same boat
Academic mentor support
- Hard drive as a storage space
- Computer as folders system
- Additional help from academic mentor
Nature of studying nursing
Positive attitude toward using e-portfolio on placement
Change in students' attitude
Factors influencing the efficacy and use of e-portfolio
e-portfolio competitors
Moodle
- Moodle as a learning a discussion space
- Moodle as a partner
- Moodle as a course content manager
- Moodle as an academic information source
- Discussion forum on Moodle for sharing
Emails
- Emails are too confrontational
- Emails as a communication and sharing tools
Computer hard drive
- Hard drive as a storage space
- Computer as folders system
Dropbox
- Dropbox as storage space and sharing vehicle
Facebook
- Facebook groups
Paper portfolio
Hindrances
Tutors-related hindrances:
- Lack of interaction with tutor on pebblepad.
- Lack of feedback from tutors.
- Lack of feedback on placement
Mentors-related hindrances:
- Lack of familiarity with PebblePad
- Mentors use only paper portfolio
Students-related hindrances:
- Lack of internal motivation
- Loss of interest after a period of time
- Lack of information regarding webfolio and collection
- Lack of self efficacy
- The first impression
- Lack of external motivation
- Conflict between students independence and tutors expectations
- underestimation of their own work on pebblepad
- lack of enjoyment
PebblePad -related hindrances:
- Lack of privacy
- Technical difficulty
Context -related hindrances:
- New learning outcomes eevry year
- Difficult access to Pebblepad on placement.
- No 'placement outcomes portfolio' on Pebblepad.
- Prepare both types of portfolio
- Repetitive tasks
- e-portfolio is not a priority on placement
- Lack of expectations
- Busy hospital environment


Reflection templates
- flexible templates
- Reflection tools enhance reflection ability
- Reflection is more than little boxes
- reflection template cause a disjointed learning
- Use of reflection tool
- Structured reflection tools are helpful
- structured versus unstructured reflection
- structured reflection save time
- templates interfere with learner autonomy
- used as starting point
- used in any context
Green dot
- green dot for feedback
- green dot for submission
Templates
- Microsoft word over built-in templates
- self-designed tools
- structured tools are ready to use
- built-in tools are not effective
- limitations of PebblePad functions
- course work templates
Functions & tools
Rosette
- Rosette- as evidencing tool
- Rosette gives structure
- Green Rosette is good for go
Action plan tool
- action plan is not a priority
- It includes evidence based questions
- excessive use of action plans
- motive to use Action Plan
- use of SOWT analysis
Achievement tool
Uploading option
Interest in CV tool
Workbooks
Tagging option
- tagging stimulate thinking
- tags as reminding tools
- Tags organize things
- tagging is easy


Motives/ drivers
Extrinsic motivation
- Encouragement from academic staff
- e-portfolio is compulsory
- If used on placement
- Impress or seek tutors' validation
- On request
- Technology advancement
Intrinsic or self-motivation
- Be proactive
- Demonstrate achievement
- Get the mindset
- Share things with the tutors
Learning styles
Reflector
- e-portfolio doesn't help with reflection
- paper portfolio for theorists and reflector
Visual
- e-portfolio for visual learners
Activist
- It suits activists
- pebblepad is not for activists
perfectionist
- flexible for perfectionists
Students
Needs and expectations
Feedback and encouragement
- appreciation and feedback
- quicker feedback
- tutor's encouragement
- The need to see the complete picture
Control
- control over learning
- control over privacy
Integration
- integration between e-portfolio, moodle and lmat
- link between PebblePad and Moodle
Training
- Further training
  - Yes
  - No
- Pebblepad support on placement
Respect and trust
- Respect level of maturity and independence
- trust
~~Problem~~ solving problems
- solve technical problems
Placement portfolio
- Use e-portfolio on placement
Accessibility
- Use handheld device
Considering Learning disability
- Dyslexic student need both portfolios
Likes and preferences
- Ability to look back
- Reflection and action plan tools
- Share work with tutors

Strategies to understand PebblePad

Training
- attending drop- in sessions

Collaboration
- Discussion with peers

Personalization
- design their own system (personalize it)

Self-learning
- students' self learning of Pebblepad
- trying new things
- keep trying
- e-portfolio is not a white elephant any more (get used to it over time)

Engagement
- the need for more engagement

Process of learning how to use e-portfolio
- avoidance- acceptance- recognition phase
- discovery phase

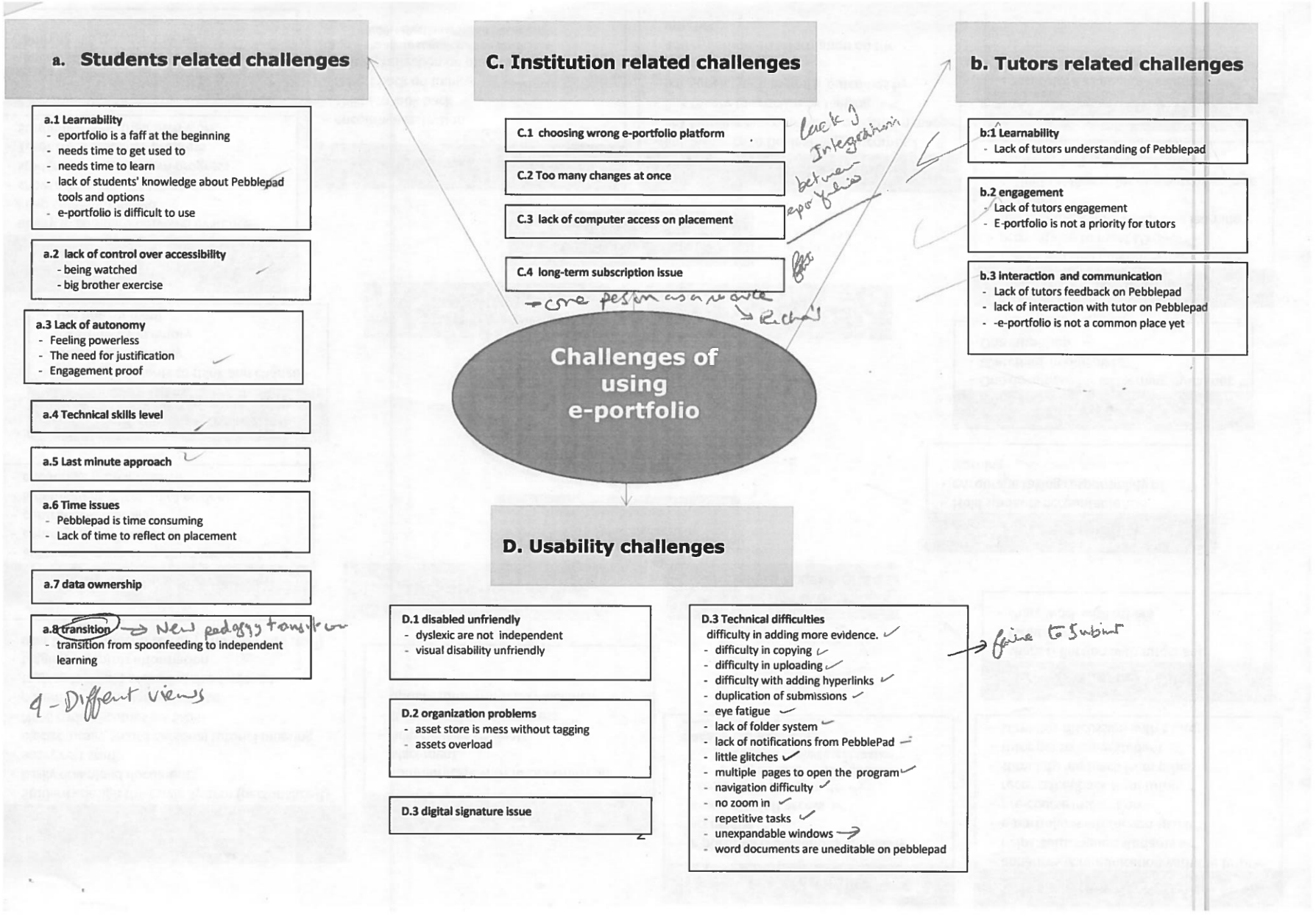
Overcome challenges

- navigation for dyslexic
- overcome repetition
- previous use of portfolio

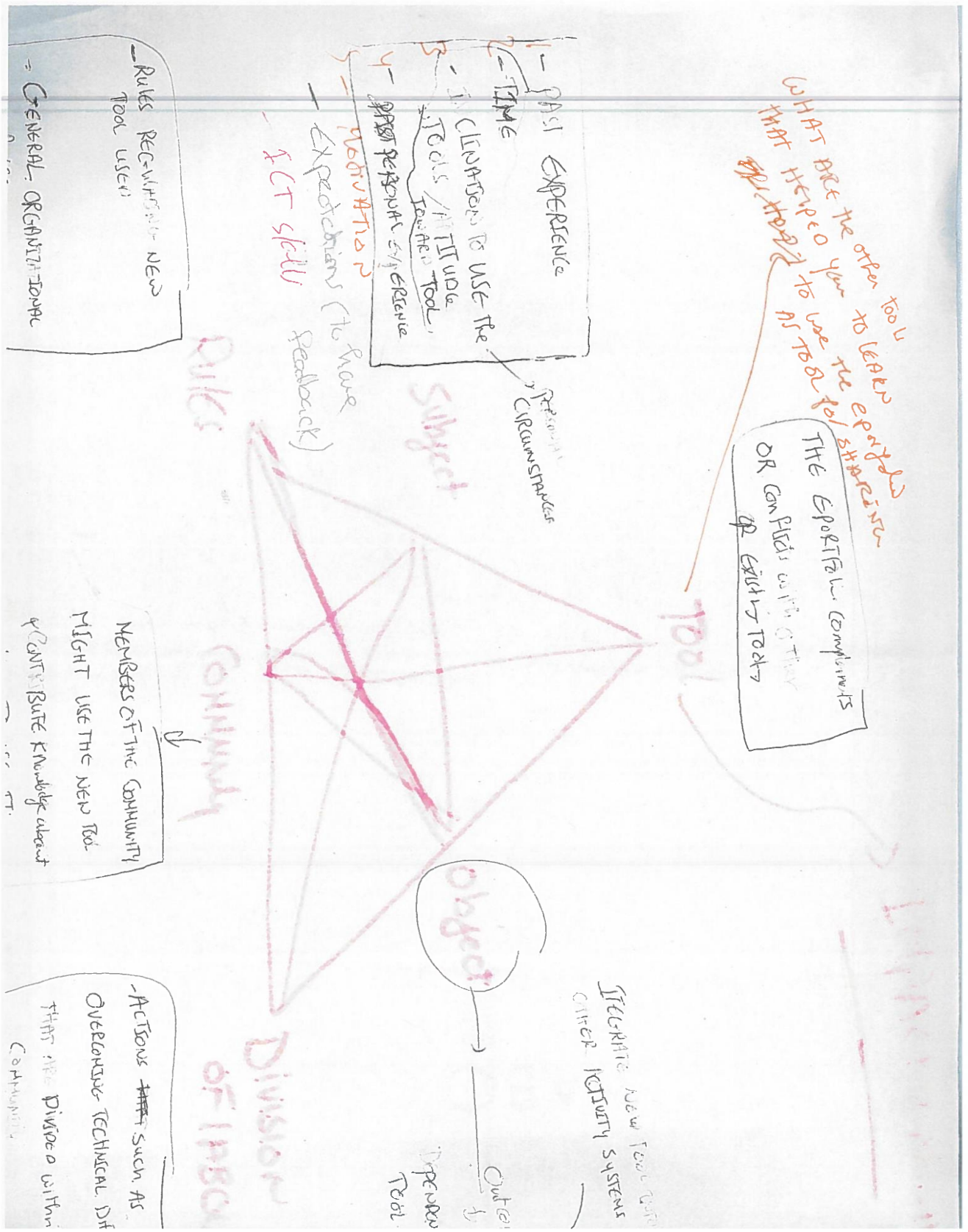
e-portfolio versus paper portfolio

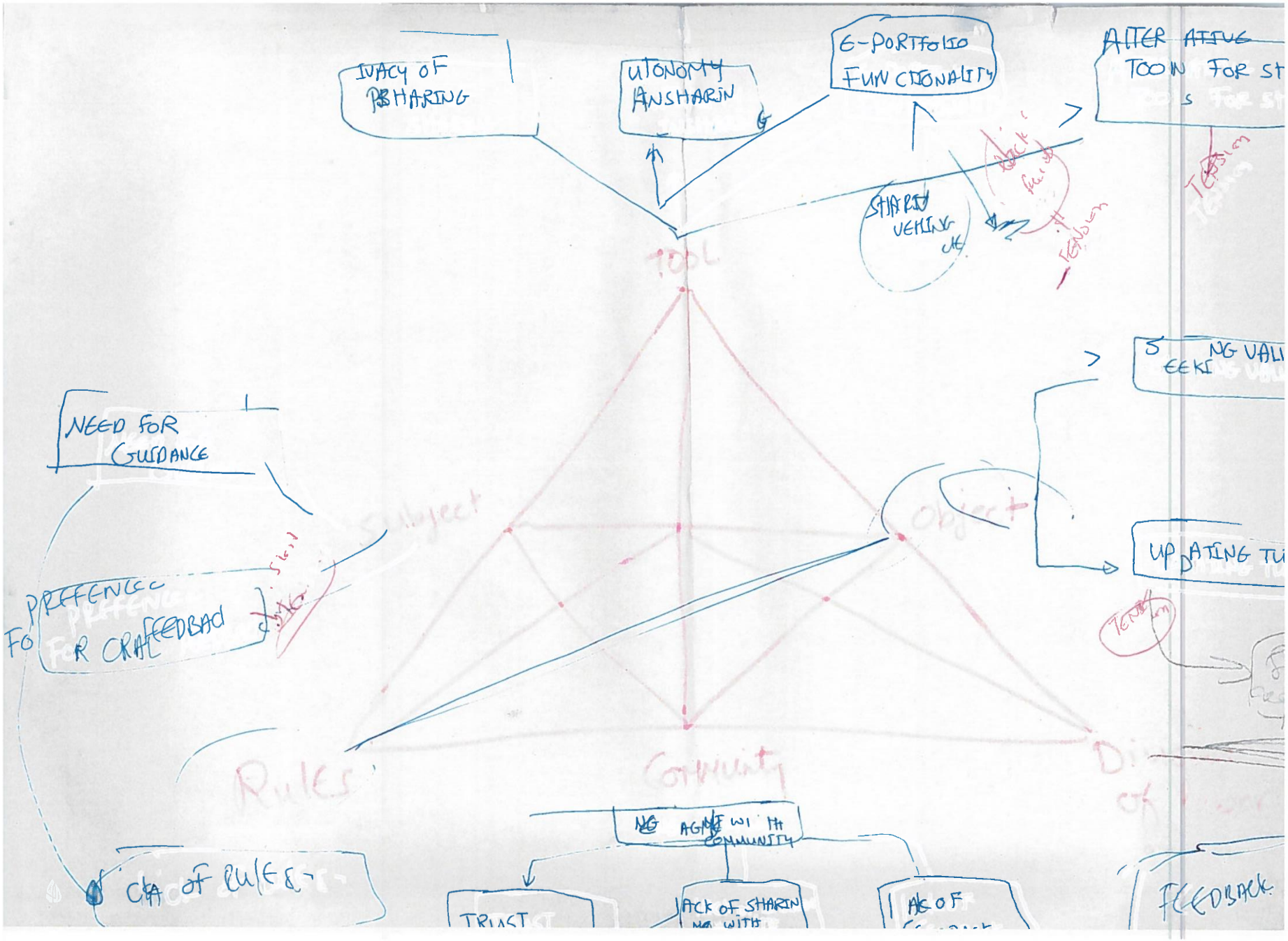
e-portfolio	Paper portfolio
• e-portfolio is easily editable	• big folders versus online space
• e-portfolio is easy to navigate	• disadvantage of portfolio
• e-portfolio is handier	• Notes are easily manipulated in paper portfolio
• e-portfolio is more portable	• Paper portfolio create a focus of discussion
• e-portfolio is more secure	• Paper portfolio is a security blanket
• e-portfolio is not for everyday use	• Paper portfolio is just a collection of work
• e-portfolio is online secure place	• Paper portfolio is more accessible
• e-portfolio link learning outcomes with curriculum map	• Paper portfolio physically more locatable
• e-portfolio saves paper	• Portfolio is more tangible
• linking things is easier on E-portfolio	• Sticky notes versus tagging
• things are more locatble on e-portfolio	• Students prefer paper portfolio
• students prefer electronic portfolio	

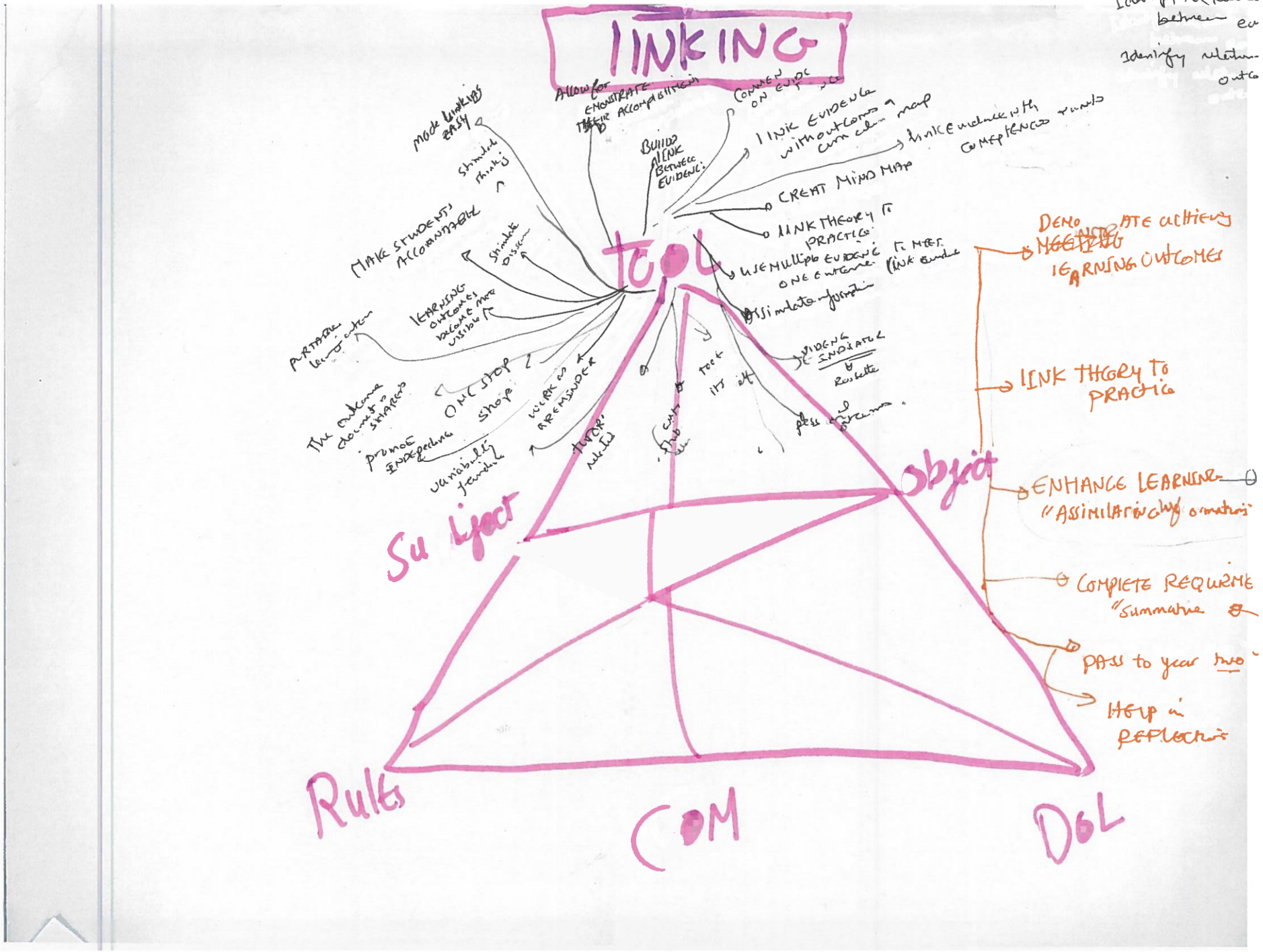
e-portfolio is impractical
Disadvantages of e-portfolio
Add to the workload
e-portfolio is fiddly
4

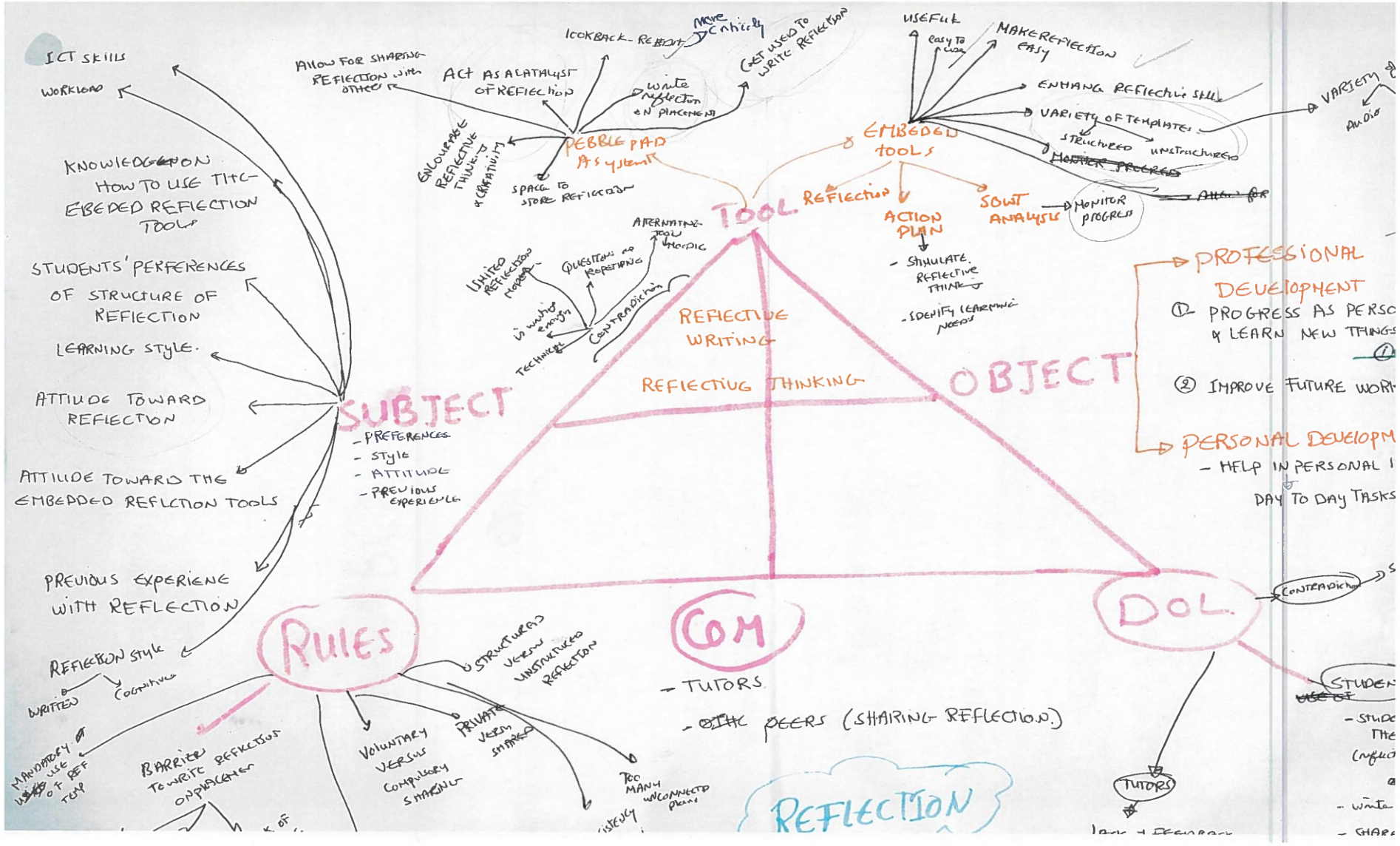

a. Students related challenges
a.1 Learnability
- eportfolio is a faff at the beginning
- needs time to get used to
- needs time to learn
- lack of students' knowledge about Pebblepad tools and options
- e-portfolio is difficult to use
a.2 lack of control over accessibility
- being watched
- big brother exercise
a.3 Lack of autonomy
- Feeling powerless
- The need for justification
- Engagement proof
a.4 Technical skills level
a.5 Last minute approach
a.6 Time issues
- Pebblepad is time consuming
- Lack of time to reflect on placement
a.7 data ownership
a.8 transition
- transition from spoonfeeding to independent learning
C. Institution related challenges
C.1 choosing wrong e-portfolio platform
C.2 Too many changes at once
C.3 lack of computer access on placement
C.4 long-term subscription issue
b. Tutors related challenges
b:1 Learnability
- Lack of tutors understanding of Pebblepad
b.2 engagement
- Lack of tutors engagement
- E-portfolio is not a priority for tutors
b.3 interaction and communication
- Lack of tutors feedback on Pebblepad
- lack of interaction with tutor on Pebblepad
- -e-portfolio is not a common place yet
Challenges of using e-portfolio
D. Usability challenges
D.1 disabled unfriendly
- dyslexic are not independent
- visual disability unfriendly
D.2 organization problems
- asset store is mess without tagging
- assets overload
D.3 digital signature issue
D.3 Technical difficulties
difficulty in adding more evidence.
- difficulty in copying
- difficulty in uploading
- difficulty with adding hyperlinks
- duplication of submissions
- eye fatigue
- lack of folder system
- lack of notifications from PebblePad
- little glitches
- multiple pages to open the program
- navigation difficulty
- no zoom in
- repetitive tasks
- unexpandable windows
- word documents are uneditable on pebblepad

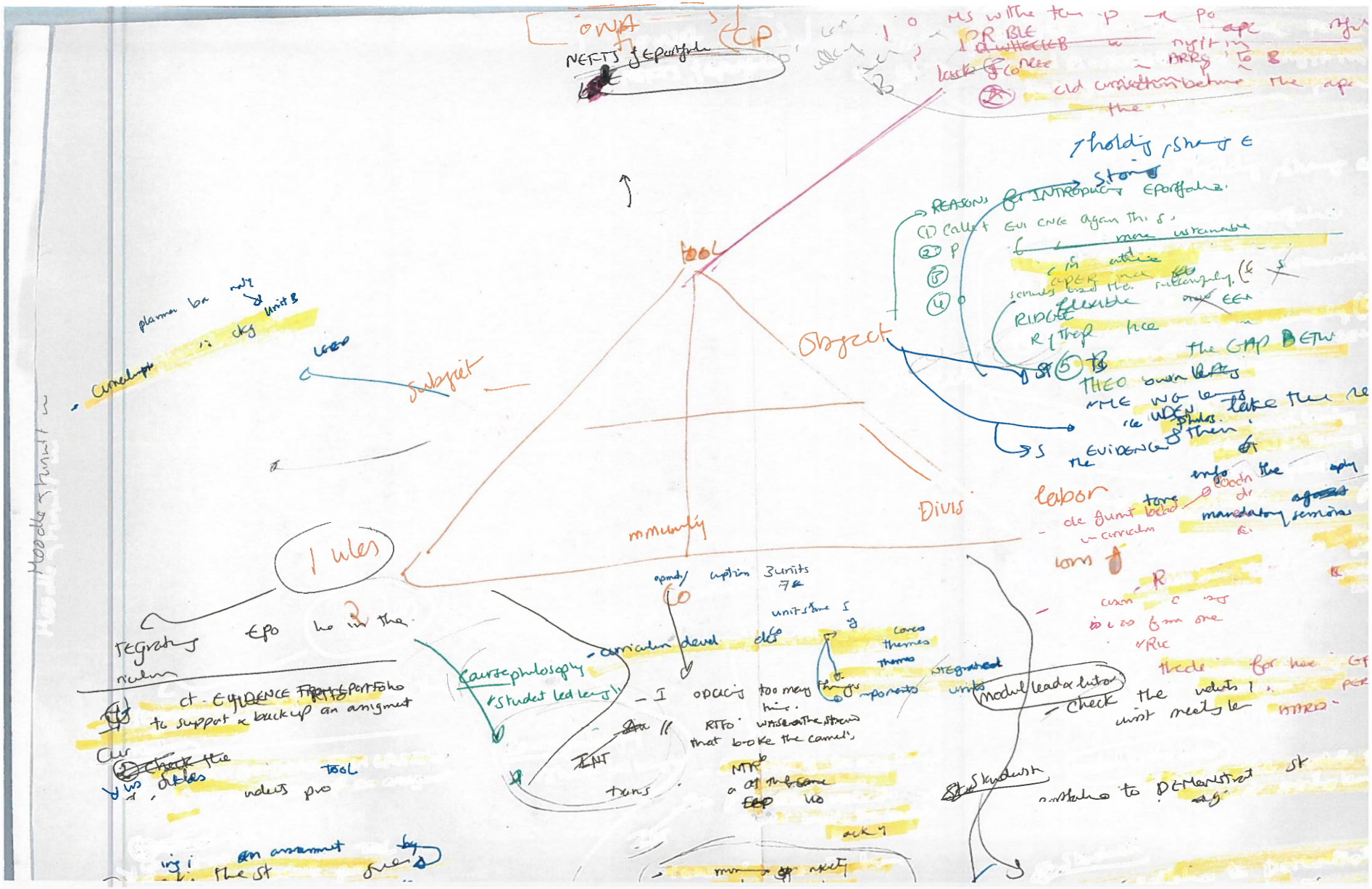
Appendix E: Coding using AT triangle

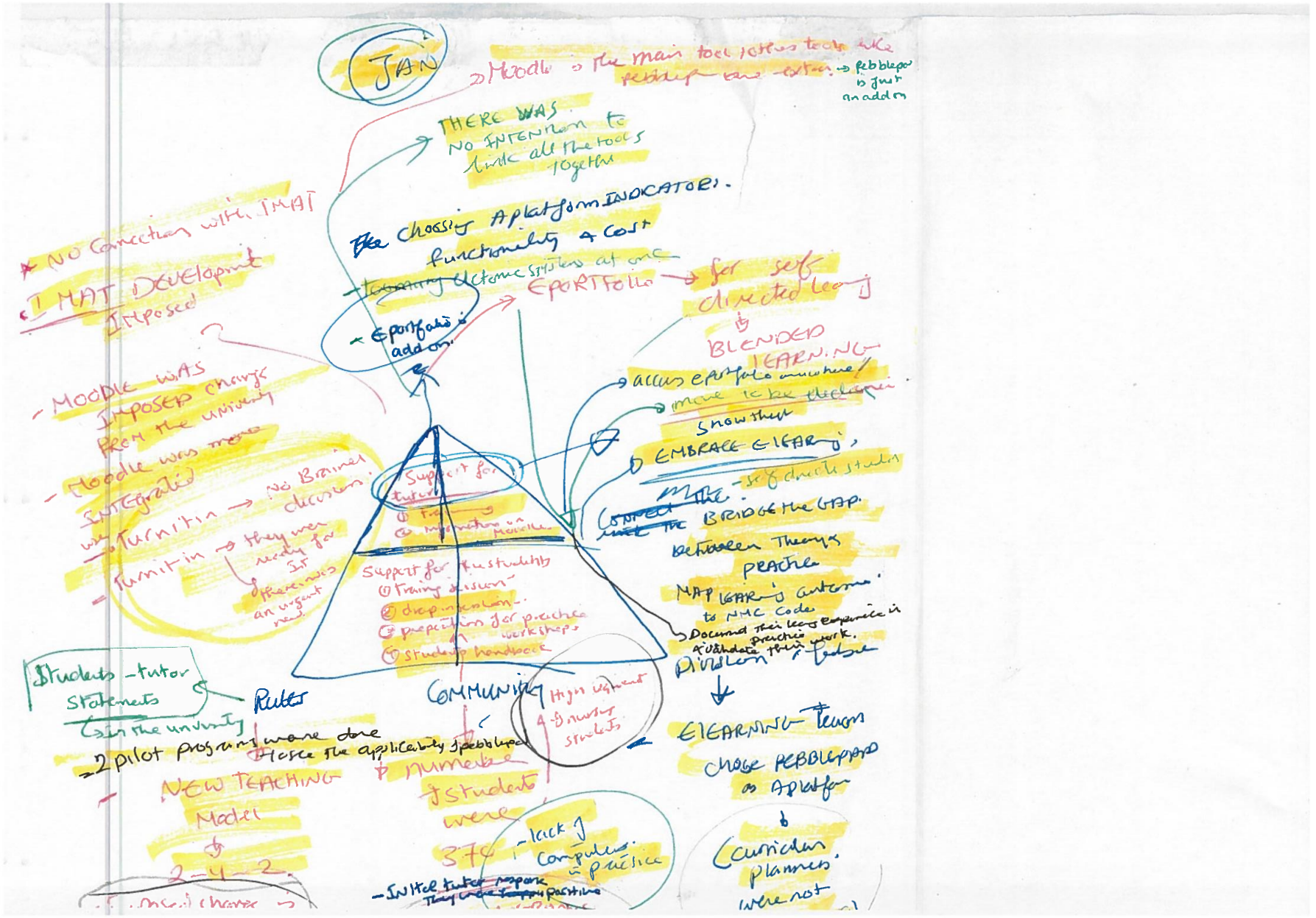


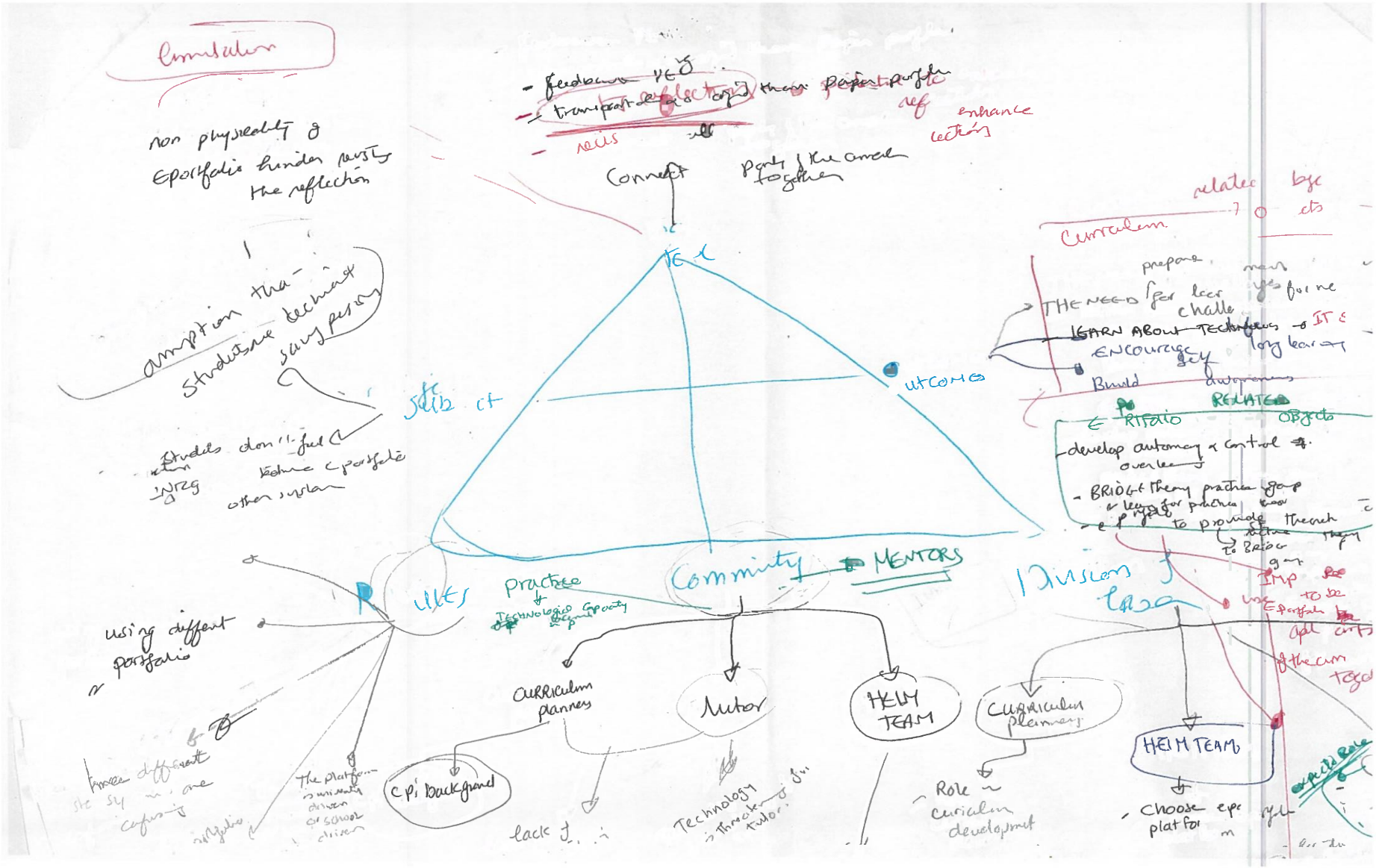

IVACY OF
PB HARING
UTONOMY
ANSHARIN
E-PORTFOLIO
FUNCTIONALITY
AITER ATIVE
TOOIN FOR ST
STHRED
VEHING
TOOL
NEED FOR
GUIDANCE
PREFENCE
R CRAFEEDBAD
Subject
Object
Rules
Community
NG AGMT WI TH
COMMUNITY
CEA OF RULES
TRUST
JACK OF SHARIN
NG WITH
AK OF
FEEDBACK
UP ATING TU


LINKING
Identify the relation between ea
Identify relation outco
Allow for ENGAGEMENT
Connect on evidence
Build a link between evidence
Link evidence with outcomes curriculum map
Link evidence with competencies
Creat Mind Map
Link theory to practice
Use multiple evidence one outcome
Assimilate junction
Evidence snapshot & Rubrics
Pass and Grades
Tool
Make Links easy
Stimulate thinking
Make students accountable
Stimulate discussion
Learning outcomes become more visible
Portfolio learning system
The outcome document is shared
Promote Engagement
One stop shop
Work as a reminder
Variability tracking
Tutor' notes
Demonstrate achieving learning outcomes
Link theory to practice
Enhance learning "Assimilation
Complete requirements "summative
Pass to year two
Help in reflection
Subject
Object
Rules
COM
DoL

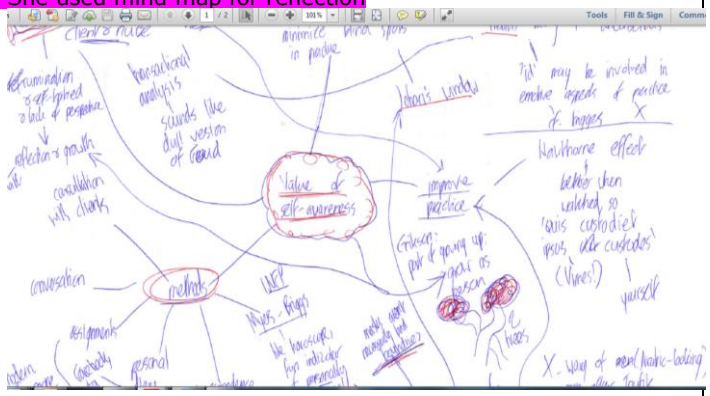
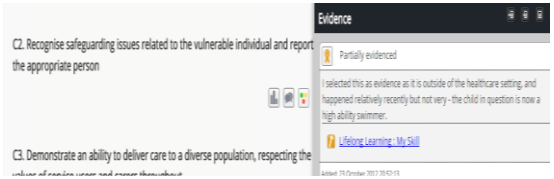

ICT SKILLS
WORKLOAD
KNOWLEDGE ON HOW TO USE THE EMBEDED REFLECTION TOOLS
STUDENTS' PERFERENCES OF STRUCTURE OF REFLECTION
LEARNING STYLE.
ATTITUDE TOWARD REFLECTION
ATTITUDE TOWARD THE EMBEDDED REFLCTION TOOLS
PREVIOUS EXPERIENE WITH REFLECTION
REFLECTION STYLE
WRITTEN
COGNITIVE
MANDATORY OF USE OF REF TOOL
BARRIER TO WRITE REFLECTION ON PLACEMENT
ALLOW FOR SHARING REFLECTION WITH OTHERS
ACT AS A CATALYST OF REFLECTION
LOOKBACK - REFLECT
MORE CRITICALLY
GET USED TO WRITE REFLECTION
WRITE REFLECTION ON PLACEMENT
ENCOURAGE REFLECTIVE THINKING & CREATIVITY
SPACE TO STORE REFLECTION
PEBBLE PAD AS SYSTEM
USEFUL
EASY TO USE
MAKE REFLECTION EASY
ENHANG REFLECTIVE SKILL
VARIETY OF TEMPLATES
STRUCTURED
UNSTRUCTURED
VARIETY
AUDIO
MATTER PROGRESS
EMBEDED TOOLS
TOOL
REFLECTION
ACTION PLAN
SWOT ANALYSIS
MONITOR PROGRES
- STIMULATE REFLECTIVE THINK
- IDENTIFY LEARNING NEEDS
ALTERNATIVE TOOL MEDIC
LIMITED REFLECTION MODEL
QUESTIONS OR PROMPTING
IS WRITING ENOUGH
CONTRADICTION
TECHNIQUE
REFLECTIVE WRITING
REFLECTIVE THINKING
SUBJECT
- PREFERENCES
- STYLE
- ATTITUDE
- PREVIOUS EXPERIENCE
OBJECT
PROFESSIONAL DEVELOPMENT
① PROGRESS AS PERSO & LEARN NEW THINGS
② IMPROVE FUTURE WORK
PERSONAL DEVELOPM
- HELP IN PERSONAL
DAY TO DAY TASKS
RULES
STRUCTURED VERSUS UNSTRUCTURED REFLECTION
PRIVATE VERSUS SHARED
VOLUNTARY VERSUS COMPULSORY SHARING
TOO MANY UNCONNECTED PLANS
COM
- TUTORS
- PEERS (SHARING REFLECTION)
DOL
CONTRADICTI
TUTORS
REFLECTION


tool
Object
subject
Divis
rules
REASONS
INTRODUCT
Store
holding
Labor
Course philosophy
Student led learning
curriculum devel
Module leader tutor
Check the values
must meet by
Skydiving
EVIDENCE
portfolio
to support & backup an assignment
RIDDLE
THEO
the GAP BETW

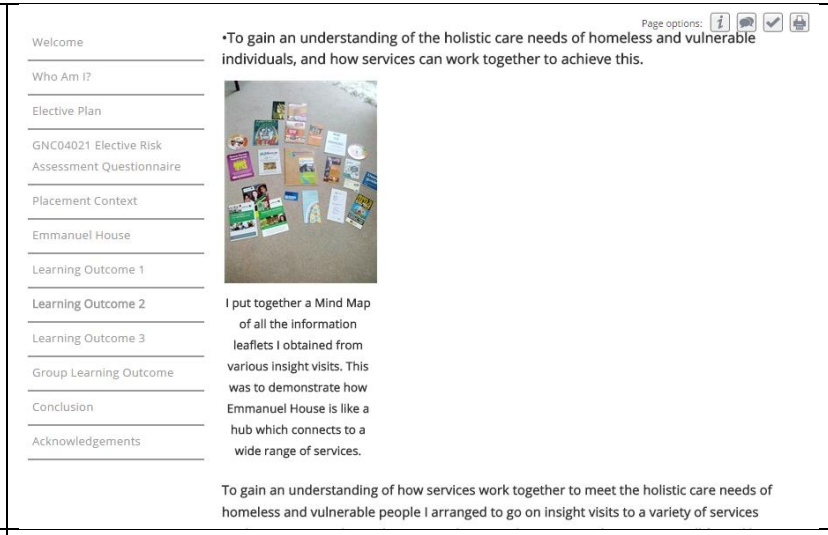

JAN
Moodle - the main tool / other tools like pebblepad have extras
pebblepad is just an addon
THERE WAS NO INTENTION to link all the tools together
The Choosing Platform INDICATORS.
functionality + cost
Electronic systems at one
ePortfolio addon
ePORTFOLIO → for self directed learning
BLENDED LEARNING
allows ePortfolio evidence
more to be the
show that
EMBRACE ELEARNING
BRIDGE THE GAP
Between Theory PRACTICE
MAP LEARNING outcomes to NMC Codes
Document their learning experience in validate their practice work.
DIVISION
ELEARNING Team
chose PEBBLEPAD as Platform
Curriculum planners were not
NO Connection with IMAT
IMAT Development IMPOSED
MOODLE WAS IMPOSED change FROM the university
Moodle was more INTEGRATED
Turnitin → no Brained chosen.
Turnitin → they were ready for it there was an urgent need
Support for tutors
Training
Information in Moodle
Support for the students
Training session
Drop in session
Preparation for practice workshops
Student handbook
COMMUNITY
Higher segment of nursing students
Students - tutor statements
Rules
in the university
2 pilot Programs were done
Assess the applicability of pebblepad
NEW TEACHING Model
2-4-2
Numerous students were
378
Lack of Computers in practice
Initial tutor response
They were supportive


Curriculum
non physically
Eportfolio hinder part
the reflection
feedback
transport
reflection
skills
Connect
Part
together
enhance
lecturers
Curriculum
prepare
THE NEED
LEARN ABOUT
ENCOURAGE
Build
RELATED
develop autonomy
overlearn
BRIDGE
to promote
To Bridge
IMP
Eportfolio
assumption that
students
using
Students don't feel
Enhance
other
using different
eportfolio
USERS
practice
Community
MENTORS
Illusion
curriculum planners
Mutor
HELM TEAM
curriculum planners
HELM TEAM
Role
curriculum development
Choose
platform
cp's background
Technology
lack
The platform
driven
school
driven

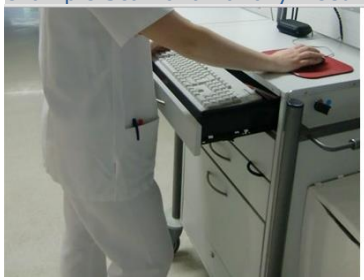
Appendix F: Example of online observation notes

Participants	Use of reflection templates	
	First year	**Second year**
Claire (1)	- She used word documents for reflection - She used mind map for reflection  - Not used any of the reflection templates - All the templates attached were those who were proforma (designed by the teaching staff) blended learning activities - They probably used word document for reflection for their placement paper portfolio	-
Emily (2)	- She wrote lecture notes in a word document  	

	She also answered the reflective question in the other templates (achievement template:  	
Naomi (3)	**She left the course**	**She left the course**
Ishah (4)	- Most of her reflection was done using reflective templates - She used different templates for different types of reflection. She used both "what? so what? now what?" and "journal entry" and structured reflection" template to write her reflection	**Links** She put a link for a video on a you tube She put links for external resources such as the independent news website **Pictures** She used pictures alongside her reflection

		
Moira (5)	**She left the course**	**She left the course**
Alexandra (6)	- No evidence or reflection templates were found in the modular portfolio	**Links on webfolio**

She used links within the text (reflection) that was connected to scanned documents from her elective placement stored in her asset store. For example Scan of an anonymised digital patient's record print out



manually.

Routinely respiration rate was not measured in contrast to the National Early Warning Score practice. I learned how to record the observations on the computer (image on the left) and also made evaluation notes about the care delivery and patient's progress (see scan of the digital patient's record print out).

She used also some links to external resources such as links to the hospital in which she had the elective placement in. she used them as references to support her reflection

Alice-Hospital does not have an Accident and Emergency department, though patients having acute cardiac problems can be delivered by ambulance to the Chest Pain Unit. To make their services more accessible the hospital has a 3D-navigation system next to the reception which is available in 12 languages and has options such as disabled access. The program can be downloaded from the website or directly in the hospital as a smart phone application.



3D-Navigation application for smart phones, reproduced with permission from SIS | sign information systems gmbh, Hamburg

I created and delivered a PowerPoint presentation to show how I achieved our group outcome.

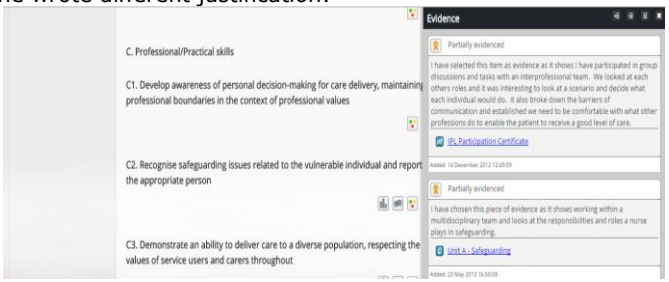
Pictures for reflection in the webfolio

		She used pictures with permission to show how she learned Supervised by my mentor I administered enoxaparin injections and insulin to diabetes patients and learned how to record this on the computer. The ticks in the 'Medikation' (drugs) section on the first page of the scan indicate that the tablets/injections were given. Since there were a number of cardiology patients I also had an opportunity to learn how to produce an electrocardiogram (ECG) using a 12-lead ECG machine and how to attach and use a cardiac monitor.  Blood warmer, reproduced with permission from Lab-Kits (2010) I learned to set up a blood warmer (see image on the right) for blood transfusion using aseptic non touch technique (Dougherty and Lister 2011). These are sometimes used in the UK (RCN 2013).
Beatrice (7)	- She used word documents for most of her reflection except those which were designed by the teaching staff at the beginning (understanding self, who am I)	**Links on webfolio** - She put link within the text (reflection) that was connected to a scanned documents from her elective placement stored in her asset store I assisted a case conference where members of the multidisciplinary team were present. the main aim of the meeting was to discuss and ensure that end of life patients care needs were met through a planned **Pictures in the reflection section in the Webfolio** - She didn't use pictures in the reflection section in the Webfolio
Catherine (8)	- She used word documents for most of her reflection except those which were designed by the teaching staff at the beginning (understanding self, who am I) - She wrote a justification for attaching certain evidence to learning outcomes. The first one was a certificate:  	

The second one was an assignment:



She used the same above evidence for different outcomes and this time she wrote different justification:



Then she wrote one justification for 3 or 4 evidence:



Templates

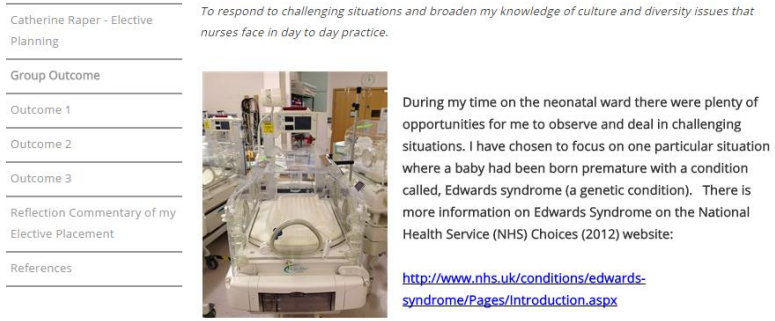
She used the what? So what? Now what? Template within her webfolio

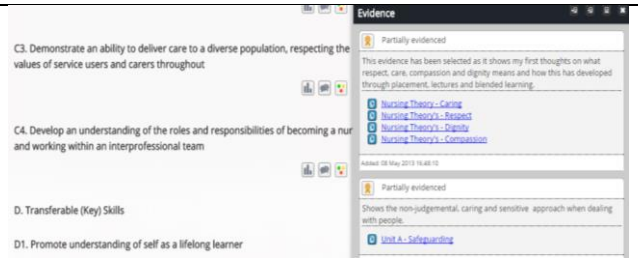
Pictures and links in the reflection section in the Webfolio

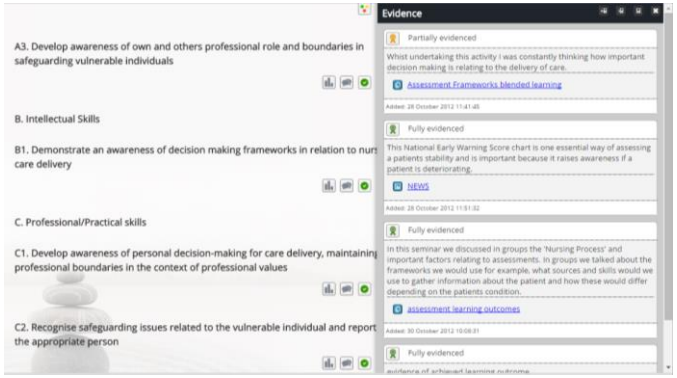
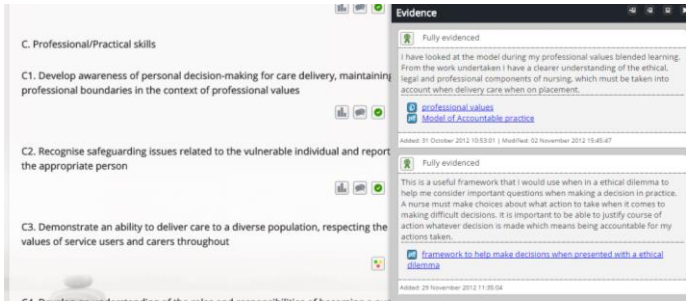
She used a photo from the placement to support her reflection

Links

She used a link for external resource



		
Joe (9)	- She used "structured reflection template and word documents to write reflection	**Links in the Webfolio** - She used links to connect with a previous reflection in her asset store (that reflection was written in the "structured reflection template) - She put links to other assets as well **Templates** She wrote reflection on her elective placement in the "structured reflection" template in the Webfolio **Pictures** She used lots of personal pictures in the hospital and photos for some machines

Rebecca (10)	- She used both inbuilt templates "journal entry" and word documents to write her reflection. - - She wrote justification for attaching evidence:  - Just simple description not a deep reflection:   	**Links within the reflection in the Webfolio** - She put a link to her reflection to a previous reflection in her asset store At Lowdham Grange prison drug, violence and gang cultures become the norm and raise constant issues for healthcare staff. Often the nurse is the nearest available person that the prisoners can reach out to in times of emotional distress. I used a non-judgemental approach this is important and somewhat challenging being in this environment. Nurses must be able to remain professional and fair whilst offering support, immunisations and vaccinations, emergency first aid and making referrals. Some of the services that I witnessed and worked with are the Integrated Drug and Alcohol Team (IDAT), mental health team and the Assessment, Care in Custody and Teamwork (ACCT Plan). The mental health team assessed the prisoners spiritual needs during discussions around their life and the purpose of life. There were times when the prisoners needed quiet time to think about their life and what is the way forward for them. The prison has a chapel on site where the prisoners can prey at certain times of the day to maintain their spiritual health and wellbeing. (Please click for reflection) **Templates** - She used the "structured reflection" template to write her reflection about the elective placement **Pictures with reflection** She used pictures with her reflection I also had the opportunity to assess new prisoners at the admissions office with my mentor. I soon realised that this was an important opportunity for the nurse to begin to build a therapeutic relationship with the prisoner and to discuss his mental health and wellbeing. This initial assessment helps to identify health priorities and trigger an early pathway for continued mental health support and care which is vital to prevent mental health issues becoming damaging to the individual and others.  (Activity log please click) Prisoners were were able to make a self referral to the primary mental health team. During my time with the primary mental health team I learnt how to assess the severity of a persons mental health problems by using a threshold assessment grid (TAG). The reason for referral was always discussed with the prisoner using a standardised questioning approach.The questions asked were related to: current mental health needs? What the patient requests? History of mental health problems/professional diagnosis? Their insight into their own mental health? Substance abuse history? Sleep, diet and mood

She also answered the reflective question in the other templates (activity template) :

Impact Of The Activity

I will have a better understanding of the subject which will help me in lectures as I will be able to fill in any knowledge gaps.

Overall Reflection

I am trying constantly to develop my personal best and to do this I have to take my studies seriously by organising my study time and to make the most of it.

Impact Of The Activity

what impact is this activity likely to have on your learning or performance?

Learning about treating people fairly and giving all prisoners equal opportunities has opened up my awareness which has had a positive impact on my performance personally and professionally.

Overall Reflection

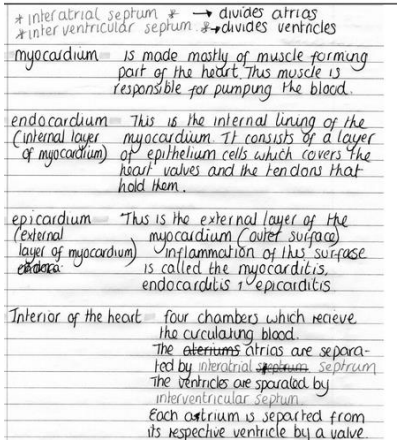
why is this activity important or relevant? How does it relate to your overall learning and development?

I will continue to work within the National Equality Policy Statement during other placements and do my part in making sure that anybody with physical, sensory, or mental disabilities can equally participate in leading a normal life

Add Evidence

do you have any evidence to support this record?

Example of notes



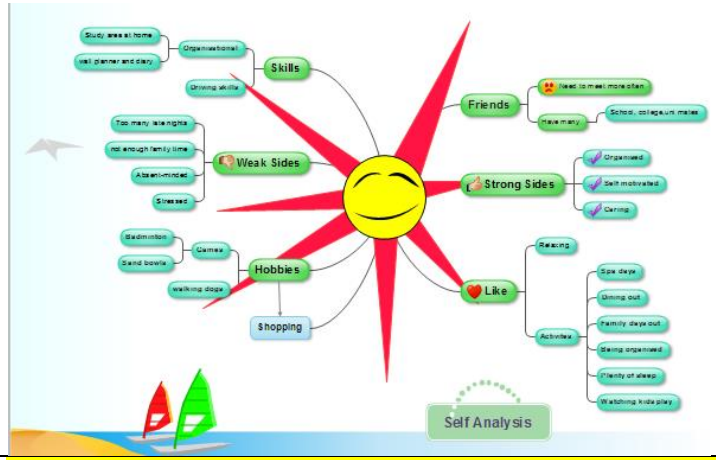
* interatrial septum * → divides atrias
* inter ventricular septum * → divides ventricles

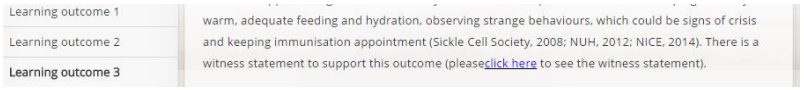
myocardium — is made mostly of muscle forming part of the heart. This muscle is responsible for pumping the blood.

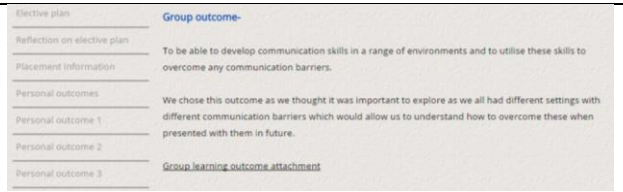
endocardium (internal layer of myocardium) — This is the internal lining of the myocardium. It consists of a layer of epithelium cells which covers the heart valves and the tendons that hold them.

epicardium (external layer of myocardium) — This is the external layer of the myocardium (outer surface) inflammation of this surface is called the myocarditis. endocarditis / epicarditis

Interior of the heart — four chambers which recieve the circulating blood.
The ~~ateriums~~ atrias are separated by interatrial ~~septum~~ Septrum
The ventricles are spavated by interventricular Septum
Each ~~a~~trium is separted from its respective ventricle by a valve.

	She did a reflection using mind map. She said "The mind map shows that I can display information in a different presentation.)  	
Patience (11)	- No evidence or reflection templates were found in the modular portfolio	**Reflection templates in the Webfolio** - She used the "what, so what? Now what?" Template to write her reflection in the Webfolio **Links in the Webfolio**

		- She put links within the text (reflection) that was connected to a some assets stored in her asset store  Learning outcome 1 Learning outcome 2 Learning outcome 3 warm, adequate feeding and hydration, observing strange behaviours, which could be signs of crisis and keeping immunisation appointment (Sickle Cell Society, 2008; NUH, 2012; NICE, 2014). There is a witness statement to support this outcome (pleaseclick here to see the witness statement). **Pictures in the reflection in the webfolio** She didn't use pictures at all
Gemma (12)	- No evidence or reflection templates were found in the modular portfolio	**Links in the Webfolio** - She put links within the text (reflection) that was connected to a some assets stored in her asset store - She put link to external resources in the internet for example: the resuscitation council UK  Acknowledgements/Bibliograpl Nottingham is ranked 20th most deprived district in England in the 2010 Indices of Multiple Deprivation (IMD), a relative improvement on 7th in the 2004 IMD. Nottingham City Council (2014) How will this affect my placement experience? This will affect my placement by there being the possibility to care for patients from different ethnic backgrounds who may not have English as their first language. As a professional, I will need to seek guidance from my mentor when appropriate to help overcome any language barriers. Nottingham City Council **Pictures in the reflection in the webfolio** - She used some one picture in her reflection on the webfolio
Richard (13)	**He left the course**	**He left the course**
Hanna (14)	- She used the template "what? so what? now what" to write her reflection in the webfolio	**Templates** She used the template "what? so what? now what" to write her reflection in the Webfolio **Links in Webfolio** She had a link to the group Webfolio

		 **Pictures** She didn't use any pictures in the reflection in the Webfolio

Appendix G: The findings from student' demographic questionnaire information

Students' background information

Names	Gender	Age	Home or international	Highest qualification	Mode of study	Current path	Field name	disability	Computer Skill Level	previous experience with paper or electronic portfolio	attended training session
S1-I	F	21-25	Home	A levels	Full time	Msc	Mental health	No	High	Yes paper portfolio	Yes
S2-I	F	Under 21	Home	A levels	Full time	Msc	Mental health	Yes Mild hearing impairment	Average	Yes paper portfolio	Yes
S3 -I	F	26-30	Home	Bsc Degree in (youth studies)	Full time	Bsc	Mental health	No	Average	Yes paper portfolio	Yes
S4-I	F	Above 30	Home	Postgrad MSc	Full time	Bsc	Mental health	No	Average	Yes paper portfolio	Yes
S5-I	F	Under 21	Home	A levels	Full time	Msc	Mental health	Dyslexia & visual impairment	Average	No	Yes
S6-I	F	Above 30	International	HE Degree Germany & Access to HE Diplomas	Full time	Bsc	Adult	No	Above Average	Yes paper portfolio	Yes
S7-I	F	26-30	International	Access to HE Diplomas	Full time	Bsc	Adult	No	Above Average	Yes paper portfolio	Yes

S8-I	F	26-30	Home	Access to HE Diplomas	Full time	Bsc	Adult	No	Above Average	No	Yes
S9-I	M	Above 30	International	Access to HE Diplomas	Full time	Bsc	Adult	No	Above Average	No	Yes
S10-I	F	26-30	Home	Access to HE Diplomas	Full time	Bsc	Adult	Yes Hearing	Average	Yes Paper portfolio	Yes
S11-I	F	Above 30	International	**MPH** & Access to HE Diplomas	Full time	Bsc	Adult	No	Average	No	yes
S12-I	F	21-25	Home	A levels & BTEC National Certificate	Full time	Bsc	Adult	No	Average	Yes	Yes
S13-I	M	Above 30	International	Bsc degree in (mathematics)	Full time	Bsc	Adult	No	Average	No	Yes
S14-I	F	Under 21	Home	A levels	Full time	Bsc	Adult	No	Average	No	No